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THE

DUBLIN JOURNAL

OF

MEDICAL SCIENCE;

EXHIBITING

A COMPREHENSIVE VIEW

OF THE

LATEST DISCOVERIES

IN

MEDICINE, SURGERY, AND THE COLLATERAL SCIENCES.

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NOTICE TO CORRESPONDENTS.

We have received the valuable Essay on Insanity, by the late Dr. Cheyne, and shall present a notice of it in the forthcoming number of the Journal.

THE

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OF

MEDICAL SCIENCE,

1 MARCH, 1843.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Cases of Strumous Peritonitis with Effusion.* By SIR HENRY MARSH, Bart., President of the College of Physicians. With Supplementary Remarks by FLEETWOOD CHURCHILL, M. D., M. R. I. A.

THE following cases are intended to illustrate a particular form of disease, which I shall term "Strumous Peritonitis with Effusion." This appellation seems to me to designate, more accurately than any I could adopt, the real nature and character of this affection. It occurs, under a variety of circumstances, in persons of a peculiar constitution, and terminates in effusion; the quantity and quality of the effused matter varying considerably in different individuals, and influencing materially the progress and ultimate issue of the case. It is sometimes presented in an acute form, and runs a rapid course; more frequently, however, its early symptoms are obscure, its progress slow and tedious, and the effusion does not take place until after a considerable length of time. Oftentimes, if the true nature of the disease be early detected, it yields to judi-

cious and well-directed treatment; but in other instances, the symptoms, though mitigated by treatment, recur again and again, until at length the patient is cut off by this formidable malady. I do not recollect having met with any example of this affection, either during infancy, or after the middle period of life; all the cases which have fallen under my observation having occurred in individuals of, from three or four, to about thirty years of age. It frequently arises without the intervention of any well-marked exciting cause, and sometimes sets in, either gradually or abruptly, during the progress of some other disease. A few examples, derived partly from memory, and partly from notes taken at the time, will best elucidate the nature of this affection.

A girl, aged 13, one of a family, every member of which exhibited signs of struma, was attacked with gastric remitting fever, presenting the usual symptoms of that disease. On the fourteenth day of her illness, an abatement of the febrile symptoms having taken place, she was suddenly seized with abdominal pains, rendered more severe by pressure. There was a great increase of fever, the pulse became exceedingly quick, small, and tense, the skin hot and dry, with an expression of extreme distress and anxiety in the countenance. The pains were relieved by fomentations, by the application of a few leeches (for at that stage of the fever, she could ill bear the detraction of blood), and by the internal administration of calomel and opium. Still, however, the general distress continued to increase, and, after the lapse of some hours, she presented all the characters of one dying of peritoneal inflammation: the abdomen began slowly and gradually to enlarge; it became tense, but not in the slightest degree tympanitic; the pulse was now so small that it could scarcely be felt, and so rapid, that it could not be numbered; the debility was extreme, and she appeared to be sinking fast. At the expiration of about two days, during which time her death was hourly expected, the abdominal distention had considerably in-

creased, and fluctuation had become unequivocally perceptible. Mercury was rubbed in over various parts of the body, in quantities only limited by the fatigue of the patient, and was also continued internally. The bowels all the while yielded readily to injections, and the evacuations were fluid and bilious. After some time, all abdominal pain having ceased, and the abdomen having reached its highest degree of distention, the pulse became more distinct, and the debility less overwhelming; the skin begun to relax, and slight mercurial ptyalism was established. The urine, which had hitherto been high-coloured and scanty, became more abundant, and deposited a copious lateritious sediment. The relaxation of the skin, the increased renal secretion, and the slight ptyalism, occurred simultaneously. Gradually the abdomen became less tense, and, as was proved by measurement, slowly diminished in size. During the progress of this slow process of absorption, the patient was nourished with farinaceous food and ass's milk. The influence of mercury on the system was still moderately maintained, and the febrile symptoms gradually receded. At the end of about twelve days the abdomen had subsided considerably. The patient daily improved in health, and ultimately no traces of the effusion remained. She is now, after the lapse of four years, restored to tolerably good health; the alvine functions are normal, but she looks pale and delicate, and requires, in her general management, more than ordinary care and attention. A few months since, having been attacked with catarrhal fever, which proved tedious and obstinate, the ingress of phthisis was seriously apprehended. She is now, however, exempt from signs of pulmonary disease, and enjoys as much health as falls to the lot of those whose constitutions are innately delicate and feeble.

The following case, which fell under my observation about five or six years ago, presented many features identical with those of the one just related; but it was still more acute, and more rapid in its progress. A young man, aged 19 years, had

been for four weeks labouring under gastric fever; he had several brothers and sisters, every one of whom was affected with fever of the same type and character. They were all attacked in the middle of the month of July, when the weather was exceedingly hot. In all, the fever was characterized by profuse perspiration, diarrhœa, and successive crops of apthæ in the mouth and fauces. Struma, in various forms, pervaded the whole family. Just about the period when convalescence was establishing itself, and when he was greatly reduced both in flesh and strength, he was seized with slight wandering abdominal pains; these, not yielding to any treatment which, under the circumstances, could be ventured on, gradually increased; the skin became hot and dry, the urine scanty, the pulse small and incalculably frequent. After the lapse of about thirty-six hours, abdominal tumefaction manifested itself, and in a few hours afterwards the existence of fluctuation was unquestionable. From the commencement of the attack he was utterly sleepless, and extremely restless; delirium soon set in, the vital powers rapidly sank, and in a few hours from the time that fluctuation was perceptible, he expired. It is remarkable that his brother, just at the same period of the fever, was attacked with pain in the left side, dyspnœa, renewed fever, and complained of great sinking and debility. On examination, there was dulness on percussion, and loss of respiratory sound over the base of the left lung; the effusion gradually extended itself upwards, until the left side of the chest became greatly dilated, and the heart so much displaced, that its pulsations were visible at the right of the median line. He continued for several days in imminent danger; the urgent symptoms then gradually abated under the influence of counter-irritation, accompanied with steadily repeated frictions with the ointment of the proto-ioduret of mercury. Absorption slowly and steadily progressed, and, after the lapse of many weeks, the chest was reduced to its natural size, and the heart's impulse could be felt nearly in its normal situation. Ultimately the left side

of the chest fell in, and he is now restored to health, retaining, however, a slight contraction of the thorax, and some distortion of the spine. Thus we perceive in the cases of these two brothers, that inflammation had affected the serous membranes—in one, of the abdomen, in the other, of the thorax; and that in both copious effusions resulted; but the one who sunk under the disease was much more reduced and debilitated by the previous fever than the other; the characteristic features of the disease were the same in both, the locality only different. It may further be remarked, that a pleuritic effusion is generally less dangerous than an abdominal, and, as far as my observation has gone, of much more frequent occurrence. These are not the only instances in which I have met with inflammation of the serous membranes, followed by effusion, during the progress, or rather towards the close of prolonged fever. It is always, under such circumstances, an occurrence of the greatest danger, and requires the nicest and most judicious treatment. The reduction of the vital powers, by the antecedent fever, either precludes altogether the abstraction of blood, or, if in any degree admissible, renders it necessary to employ the remedy in the most circumspect and cautious manner. Blisters, so applied as to produce as copiously as possible serous discharges, and mercury, especially its external application, persevered in until some constitutional effect be produced, are the really efficient remedies. Still, however, formidable as these cases are, unless the vital powers be extremely reduced, the hopes of ultimate recovery are not to be abandoned.

It is very probable, in cases of this description occurring after a long fever, during which the blood is altered and deteriorated, that the fluid effused is thin and serous, possessing but little, if any, of the more solid constituents of the blood, and consequently capable of an almost total absorption; and there is every reason to believe that in such cases—indeed in every case when the effusion is limpid and serous—the greater part of the fluid is removed by absorption, so that only a few slight

adhesions remain, and that in many such cases, the serous membrane is, if at all, but slightly thickened, and not often invested with those dense adventitious layers which are frequently observable after other forms of both pleuritic and abdominal effusions.

The foregoing cases are sufficient to illustrate the nature of the acute form of the disease; we shall now proceed to a brief consideration of the same affection, when it assumes a more prolonged and chronic character, and is not connected with, or resulting from, any pre-existing febrile movement in the system.

The first case of this kind which fell under my observation occurred early in my professional life; I was at the time unaware of its true nature, but it made a strong and lasting impression on my mind.

The disease affected a young lady, 16 years of age, who from deficiency of growth, retained all the characteristics of childhood. She had been some weeks ill before I saw her, the symptoms appearing so slight that it was not deemed necessary to subject her to any medical treatment. I found her already a good deal emaciated, with the abdomen slightly tumid, and some degree of tenderness on pressure in various parts, but not permanently tender anywhere; there was also diarrhœa with griping pains, which recurred at irregular intervals of two or three days. The evacuations were frequent, small in quantity, liquid and yellow; thirst, though not intense, was always present; the tongue was red at the point, and somewhat coated in the centre; the pulse permanently quickened, varying, at different periods of the day, from 90 to 100; the urine was scanty, and high coloured; appetite was totally lost, and there was much depression of the vital powers. She remained for weeks in this state, the symptoms temporarily mitigated, but never permanently subdued by treatment. She gradually became more and more emaciated, and during a considerable period the abdomen continued very slowly to increase in size, in the same progressive manner as occurs during pregnancy, until at length fluctuation became unequivo-

cally perceptible. About the time when the abdominal effusion had reached its acme, the character of the accompanying fever underwent a change, and at this period it assumed that of well-marked hectic; each diurnal paroxysm terminating in a general diaphoresis. The abdomen remained distended and fluctuating for many weeks, when mercurial ptyalism having been moderately produced, the secretions became more abundant, the urine more copious, and there was an evident diminution in the size of the abdomen: this was confirmed by measurement. Slowly and progressively absorption went on, till at length, and after a long lapse of time, there existed little or no trace of the original effusion; but the abdomen retained a feeling of tension and rigidity, the probable result of a permanently thickened peritoneum. The interval of time from the first trace of morbid change till the full establishment of convalescence could not have been less than eleven months; and at one period of her illness the urgency of the symptoms was so great, that little hope of her recovery had been entertained. This young lady was treated, at first, by small topical bleedings, and frequent anodyne fomentations; with blue pill and opium in small doses, to allay the intestinal irritation, and to controul the painful and wasting diarrhœa; and with anodyne enemata; subsequently, with a succession of blisters, and with such diuretics as a weak and irritable stomach could best endure; lastly, by mercurial inunction until ptyalism was fully established. The establishment of ptyalism and the improvement in the symptoms were cotemporaneous. Her diet was almost exclusively liquid and farinaceous; ass's milk, with the addition of a little lime water, was most grateful to the stomach, and formed for months the principal article of nutriment. A change from town to the pure air of the country, when the period of greatest danger had passed away, was attended with marked and decided advantage. Though still delicate, she recovered sufficiently to admit of her crossing the Channel, and travelling by easy stages through the South of England, where she spent several months;

and, whilst changing air, she improved both in health and strength. About a year after her return she was seized with Asiatic cholera, which was at that time raging, and had reached its highest point of fatality. Her delicate health having excluded her from all society, she was not exposed to any discoverable source of contagion; no other individual in the house, either then or subsequently, was attacked by cholera; nor was there, as far as I could learn, any case of the disease in the street in which she resided. Yet I found her, after having had vomiting and diarrhœa for not more than three hours, pulseless, cold, and blue. She died at the end of a few hours, without pain, spasm, or suffering of any kind. No examination of the body was permitted.

This case is a well-marked instance of the chronic form of strumous peritonitis with effusion, from which the patient, after a very tedious and dangerous illness, recovered. The symptoms at the commencement were exceedingly obscure; had I been then, however, as well acquainted as I now am, with the symptoms and progress of this affection, I should have been enabled at a much earlier period to have detected its real nature. In conducting the treatment, it is evident that an early diagnosis is of the utmost importance.

The following case affords another specimen of the same disease.

Mrs. W——, æt. 22, four years married, has had two children, the younger of whom is nearly two years old. On visiting her for the first time, I found her pacing a room in a state of great anxiety and agitation, looking pale and haggard, and unable to maintain a perfectly erect position. The abdomen was so protuberant as to suggest the idea that she was in, at least, the sixth month of pregnancy; an idea with which both she and her friends, until a few days previously, had been fully impressed. It was in consequence of a doubt having been expressed on this subject by her ordinary medical attendant, that I was requested to see her. She had totally lost her appetite,

suffered from constant thirst, febrile heat and flushings, with frequent and painful diarrhœa. When undressed and in bed, the examination of the abdomen proved the existence of fluctuation. The pulse was 120 in the minute, the skin hot; there was general tenderness on pressure over the abdomen; urine scanty and high coloured; her strength was greatly reduced; she was much wasted, and the mammæ partook of the general emaciation. She had been complaining for many weeks before I saw her, but the symptoms had crept on so slowly and insidiously, that the exact time of their ingress could not be accurately ascertained, nor could she assign any satisfactory cause of the disease. She was directed to confine herself to bed; and solid food, which she had previously been forcing herself to take, was altogether prohibited. Leeches were repeatedly applied to those parts of the abdomen where tenderness on pressure was most evident; anodyne fomentations were frequently resorted to with relief; and, subsequently, blisters were placed in succession over every part of the abdomen. The diarrhœa soon ceased, and after some time it became necessary to give gentle aperients; the febrile heat, after a few days, was diminished, the skin became softer, and the pulse less tense. Mercury, by inunction, was now administered, and digitalis, with nitre in small and often repeated doses, were prescribed. Many days elapsed before any perceptible effect was produced by this treatment; at length the abdomen became less distended, and the urine was secreted more abundantly. The mercury acted favourably, though ptyalism was not produced. The fever now assumed the characteristics of hectic, ending in perspiration which engaged more especially the upper parts of the body. The abdomen gradually and slowly diminished in size; and at the expiration of a considerable interval of time the tumefaction had become much reduced, leaving several rounded tumours obscurely discoverable in various parts of the abdomen, and one in particular in the lower part of the hypogastric region, which felt like an enlarged uterus. These also gradually disappeared, and at the end of

fully ten months no abnormal condition of the abdomen could be detected by the touch. By degrees she regained flesh and strength, and her convalescence after this tedious and prolonged illness was at length completely established. She has continued for the last three years in the possession of as good health as she ever enjoyed, with this exception only, that the menses have never reappeared.

This lady had, during childhood, suffered from strumous inflammation of the cervical glands, one of which suppurated, and has left the usual characteristic cicatrix.

I omitted to mention, that at a late period of the disease, when the febrile symptoms had abated, iodine in various forms, both externally and internally, had been abundantly administered, and certainly, at the stage alluded to, with decided advantage. This is not the only case of this kind that I have met with in which the gradually increasing distention of the abdomen, from effusion, was mistaken for pregnancy.

Master N., aged 13 years, was brought to my house exhibiting the following signs of disease: extreme pallor, emaciation, debility, quick pulse, thirst, anorexia, diarrhœa; and, when placed before me, was bent forward, and utterly unable, from pain and tension in the abdomen, to stand erect; the abdomen was prominent, tense, and fluctuating. He had been for many weeks ill before I saw him. He was treated by topical bleedings, blisters, and mercury rubbed in till moderate ptyalism was established. To this treatment all the symptoms gradually yielded. He continued for a considerable time feeble and emaciated; but is now, after a lapse of three years, restored to perfect health. He is a member of a highly strumous family.

About three years ago I saw a very remarkable instance of the same affection in a young woman, 20 years of age; the early symptoms of which were nearly identical with those already described, but the subsidence of the febrile symptoms was not followed by a diminution of the abdominal tumefaction. When I first saw her, her pulse was tranquil, her appetite, flesh, and

strength were restored, and she appeared in singularly good general health, but the abdomen remained permanently distended to an amount beyond that exhibited in the last month of pregnancy; it was tense, and in every part distinctly fluctuating. No means employed were effectual in causing absorption, and she remains up to the present time in the enjoyment of good health, but without any diminution of the enormously protruded abdomen. This has been tested by repeated measurements; and the only question now is, whether, in such a case, recourse should be had to an operation for the removal of the fluid.

When I consider the length of time during which the effusion has existed—its stationary character—the accommodation of the parts to their new condition—the exemption from disease of the mesenteric glands—the perfection of the digestive function—and the total absence of respiratory embarrassment, I should feel very unwilling, under such circumstances, to risk the consequences of an operation. When I consider, further, that there is every reason, both from the nature of the disease and from the sensations conveyed to the touch by a careful examination of the abdomen, to believe that the peritoneum is thickened; when I consider, also, the high degree of probability of partial adhesions existing between the intestines and the parietal layer of the peritoneum, I am still more strengthened in my objection to the performance of an operation. Were the effusion to increase so as to produce respiratory distress, and other disturbances of the vital functions, then indeed, however inadvisable in other respects, the operation of paracentesis would become imperatively necessary.

Miss F., aged 8 years, was brought to town, having been previously ill for several weeks in the country. When brought into my study, I observed that she was bent forward, her trunk being nearly at right angles with her limbs; she could not by any effort stand erect. She was pale, feeble in the extreme, and greatly emaciated; she was affected with thirst, anorexia,

and frequent attacks of diarrhœa. She was cold and chilly—the skin contracted and dry. Upon examining the abdomen, I found it considerably enlarged, distinctly fluctuating, and painful on pressure. The tumid abdomen contrasted remarkably with the emaciated chest and extremities. Her breathing was easily hurried, though there was no sign of pulmonary disease; the pulse very frequent, small, and contracted; much suffering and distress were expressed in her countenance; she was peevish, and unhappy. When in the recumbent position, she lay on her back, with the knees drawn up; in this position she suffered least from pain and tension. Small blisters were repeatedly applied; frictions of the proto-ioduret of mercury ointment were employed; her nourishment consisted almost exclusively of ass's milk with lime-water: whatever else of nutriment she took consisted chiefly of the lightest farinaceous food. For several days the treatment did not appear to make any perceptible impression upon the disease; at length the gums became slightly swollen, and the mercury began to act upon the constitution. A more copious flow of urine marked this change in the system: the distention of the abdomen was considerably diminished, though much of its tense and rigid feel still remained. She was now able to stand erect, and to walk about without pain or distress. By degrees her strength was so much improved, that she was able to walk to church, a distance of about a quarter of a mile; and the strongest anticipations of her ultimate recovery were entertained; yet, though she took food more abundantly, and appeared improved in every respect, she still remained pale and emaciated. Whilst in this state, she was suddenly seized with violent abdominal pain, and vomiting; her pulse, which had nearly come down to its natural standard, became incalculably rapid, small, and irregular; her vital powers were suddenly prostrated, she lingered for a few days in great agony, and died after a painful struggle.

Thirty hours after death an examination of the body was made by Doctor Hill. The limbs and upper parts of the

trunk were very much atrophied; the abdomen tense and protuberant. An incision having been made through the abdominal parietes, much difficulty was experienced in exposing the surface of the intestines, from their being closely adherent to the walls of the cavity. The connecting medium consisted of a thick layer of adventitious substance, in some situations almost as dense as cartilage, in others, softened down and presenting small depots of curdy matter. This material not only united the visceral to the parietal layer of the peritoneum, but also glued together the greater part of the intestinal canal. On an attempt being made to expose the ascending colon, by gently separating, with the handle of the knife, the connected surfaces, a large cavity was discovered extending from the upper part of the right lumbar region to the iliac fossa; it lay between the laminæ of the peritoneum, and was lined throughout with a soft, curdy, greyish-white substance; this cavity contained about half a pint of thin pus, mixed with portions of curdy matter. Upon the dissection being extended towards the left side, another circumscribed cavity, of larger dimensions, was opened, from which issued a jet of dark-brown fluid, having a very evident feculent odour. This cavity was situated between the parietal layer of the peritoneum and the anterior surface of the viscera; it extended from the great curvature of the stomach to the pelvis, and lay a little to the left of the mesial line. It was lined with a coat of curdy matter of considerable thickness, the surface of which was tinged of a brownish colour. Its contents having been sponged out, pressure from above caused immediate extravasation of fæcal matter from the lower part of the colon; but, from the strength and thickness of the substance which glued the intestines into one mass, the exact situation of the opening could not be clearly traced. A portion of the large intestine having been removed, and slit open, the mucous membrane appeared thick, soft, and vascular; the submucous glands were much enlarged, many of them softened down into a curdy-looking substance, and here and there they exhibited

spots of ulceration. The other viscera of the abdomen and pelvis appeared healthy; and the contents of the thorax were free from disease.

In this case, from the time when the earlier obscure traces of morbid action were perceived, to the fatal termination, a period of fully eight months intervened. The child had been for many weeks ill before I had seen her; at that time the quantity of matter effused was very considerable; gradual absorption afterwards took place, so as to reduce materially the size of the abdomen; it was evident, however, from its tense and rigid feel and from the general aspect and condition of the patient, that of the effused matters much were still unabsorbed: the fluid and thin portions had been removed, while the more solid parts, forming adventitious layers upon the serous membrane, remained. Previously to, and during the last and fatal attack, a new and copious effusion had obviously taken place; and there is no doubt that intestinal perforation, the result of pre-existing ulceration, was the immediate and sudden cause of death. This case illustrates the importance of the general principle, that, in inflammation of serous membranes, the prospect of ultimate recovery depends much on the nature and character of the effusion; if thin and serous, the process of absorption is capable of effecting a complete cure, leaving no trace of antecedent disease, except some few adhesive bands. But if, on the other hand, a considerable portion of the effused mass consists of the more dense and solid constituents of the blood, much that cannot be absorbed is left behind, the serous membrane is thickened, and adventitious layers, assuming sometimes the density and firmness of cartilage, and even of bone, remain; and thus, the utmost which can be expected is a partial and incomplete recovery. The parents of this child are highly strumous; her brothers and sisters exhibit this diathesis in various but distinctly marked characters; and much of the effused matter discovered on the examination after death, was identical with that usually found in a strumous abscess.

Miss R., about 22 years of age, with fair skin, light eyes, delicate complexion, prominent blue veins, subject to flushings from the slightest causes, languid in manner, indolent, and inactive, was attacked in March, 1840, with abdominal pains, which continued for several days, followed by loss of appetite, fever, hot skin, and frequent griping diarrhœa. At the commencement of my attendance, she looked like a female advanced in pregnancy. On examination, I found the abdomen considerably distended, and fluctuation distinctly perceptible. There was general tenderness on pressure over the whole abdomen, but most distressingly felt in the right hypochondriac and left iliac regions. No tumour could be perceived. She was treated by repeated small topical bleedings, a succession of blisters, absolute rest, and a strictly farinaceous and milk diet. Influenced by this treatment, the fever abated, and on the external use of mercury, a copious discharge from the kidneys was followed by a rapid absorption of the effused fluid. At the end of four weeks the effused fluid was completely absorbed. She continued for some time convalescent, and improving in health, when, from exposure to cold and over-fatigue, there was a recurrence of the same symptoms, with again copious abdominal effusion. On this occasion the breathing became short and hurried, accompanied with a small dry cough. On examining the chest, it was now ascertained that effusion into the right pleura coexisted, occupying about two-thirds of the right side of the thorax. A similar plan of treatment was again resorted to, and again the inflammation and fever abated; and after an interval of many weeks, absorption gradually progressing, convalescence was re-established. She continued in apparently good health, but still delicate, for about two months, when again, thoughtless and incautious in the management of herself, she was taken ill, and I was summoned to see her. I found her flushed, weak, languid, and depressed; her pulse 120, her breathing very quick, but no cough. Upon examination, I found the abdomen again tumid, but by no means to the extent that it had been before;

the left side of the thorax was also considerably dilated, dull on percussion, and without respiratory sound; the heart was displaced, and its impulse visibly perceptible about two inches to the right of the median line, between the fourth and the fifth ribs. She was unable to bear the detraction of blood; blisters were successively applied; mercury, in very minute and often repeated doses, was given internally, till very slight ptyalism was produced, and at the same time she took, in divided doses, between twenty and thirty drops of tinct. digitalis in the course of each 24 hours. Under this treatment the fever was again subdued, the skin became moist, the urine secreted abundantly, and, after the lapse of about four weeks, when I again saw her the effusion on the left side was so completely absorbed, that the heart was replaced, and its impulse only to be felt in its normal situation. Respiration, whilst in a state of quiescence, was also perfectly natural. The abdomen, however, remained tumified, tense, and tender, but without perceptible fluctuation, and her state altogether, though much amended, was still very far from that of health.

The disease having been thus far subdued, this young lady was removed to the country, where, for a few weeks, she appeared somewhat to improve; still the abdominal tumefaction and tenderness, anorexia, thirst, irregular fever, frequently recurring diarrhœa, deficiency of nutrition, and muscular debility, proved that organic change of a serious nature had taken place in the abdomen. No trace, however, of thoracic effusion remained. After some time, the signs already enumerated of abdominal disease gradually increased; she was unable to leave her bed, and liquid nourishment alone could be retained upon the stomach. The abdominal pains, varying in intensity, were never absent, and diarrhœa, severe and distressing, recurred during some period of every twenty-four hours. To mitigate her sufferings and procure rest, opiates in various forms became absolutely necessary. Her emaciation and debility were extreme. For several days before death she became excited,

successions of ideas, of the pleasantest and happiest kind, took possession of her mind, she made little complaint of abdominal pain, and sunk gradually, without much apparent suffering. In this young lady's general appearance, the strumous diathesis was stikingly evident. Of her sisters, two died of well-marked and unquestionable tubercular phthisis, and one of tubercular disease of the brain.

The body was examined by Dr. Hill, forty-eight hours after death. The abdomen was very prominent, tense, and hard; the limbs and upper parts of the body extremely emaciated. The abdominal muscles having been divided, the parietal layer of the peritoneum was found so firmly adherent to the visceral portion as to require the cautious use of the knife to separate them. The intestines were closely united together by adhesions, having the appearance, in many situations, of tubercular matter infiltrated into their substance. The mesentery, with its glands, formed one mass of strumous-looking deposit, through which the small intestine passed. A cautious dissection of the parietal layer of the peritoneum, from the left lumbar colon, exposed a large circumscribed cavity, lined with a greyish-white, soft, curdy matter, of nearly a quarter of an inch in thickness, and exit was given to a considerable quantity of thin, dark-coloured, purulent matter, exhaling a most disagreeable fœtor. The cavity which contained this fluid lay between the abdominal walls and the anterior surface of the intestines, and extended from the left lumbar region obliquely downwards into the pelvis; it contained about three pints of matter. The intestines were much contracted in their diameter, their coats were thickened, and the lining membrane was highly vascular, but without ulceration. The other viscera of the abdomen were apparently healthy.

In the thorax, the heart, the pericardium, and the luugs, presented the normal appearance; some lengthened adhesive bands were found attaching the lungs to the costal pleura on

both sides, but no effusion of fluid, nor any tubercular deposit existed in this region.

In this case it has been proved by dissection that the matters effused, first into one side, and then into the other side of the chest, were so completely absorbed as to leave no other morbid result than some adhesive bands: we are justified, therefore, in presuming that the effusion was of a thin and limpid nature, and capable of almost total absorption, although at the left side it must have been copious, as the heart was so much displaced. From the history of the case, there are good grounds to conclude that the effusion into the abdomen was, in the first instance, of the same nature and character; but the disease having returned, and being long persistent in this cavity, a large quantity of unabsorbable matter was gradually deposited, until the whole became one confused mass of strumous deposition and purulent infiltration. The matters effused between the serous surfaces were not modelled into the form of tubercle; nevertheless, the general character of the deposit was undeniably strumous. The diseased condition of the mesenteric glands was evidently, from the history of the case, consecutive and secondary.

The disease just described may, in general, be easily distinguished from other forms and varieties of abdominal effusion. Attention to the previous history, and observation of the earlier symptoms, are the sources from whence mainly a diagnosis may be derived. In tabes mesenterica it occasionally happens, at an advanced period of the complaint, that the peritoneum is involved in the morbid action, and that effusion ensues. The mesenteric disease, and that described in these pages, depend upon the same constitutional diathesis; and though easily distinguishable from each other at their commencement, sometimes become, towards their close, nearly identical. In the one, the mesenteric glands are at first exempt from morbid action, and effusion takes place at an early period; in the other, the primary affection is seated in these glands, and the effusion, if it

take place at all, occurs when the disease is far advanced. In strumous peritonitis, however, the mesenteric and intestinal glands are sometimes ultimately involved in the morbid action, and when this extension of disease takes place to any considerable amount, as in the last two cases, all hope of permanent recovery is precluded.

From ascites dependant upon hepatic, splenic, or renal disease, or arising from tumours pressing upon the larger vessels, this affection is readily distinguishable; as it likewise is from every variety of ovarian dropsy, and from dropsical effusion into the abdomen, resulting from cardiac or pulmonic disease. This affection has occasionally been mistaken for pregnancy, and there is an effusion which sometimes accompanies the puerperal state, and sometimes occurs after parturition, which is probably of the same nature, and dependant upon the same causes as the disease now described; having had, however, but few opportunities of closely observing the symptoms of abdominal effusion connected with pregnancy, I am unable to speak positively on this subject. This disease differs also from those forms of peritoneal effusion which take place, often suddenly, after profuse and repeated hemorrhages, or on the suppression of habitual discharges, or suspension of extensive morbid action in the skin and mucous membranes. Dr. Cheyne, in the first volume of the *Dublin Hospital Reports*, relates some interesting cases, in which previously existing diarrhœa having been suppressed, effusion into the peritoneal sac was the immediate consequence. I allude to his paper "On the alternate Excess of morbid Action in the mucous and serous Membranes." Dropsical effusions thus produced are peculiar and distinctive, and possess very great practical and pathological importance. Not in any of the cases I have recorded, nor in any of the same kind which I have observed, have I been able to trace the origin of the peritoneal effusion to the suppression of any accustomed evacuation, or of any antecedent diarrhœa. Diarrhœa, or a tendency to it, is a very frequent accompaniment of the disease, and it is

important in the treatment that it should not be suddenly checked, as I have remarked in some instances that the sudden suppression of the diarrhœa by strong astringent medicines has been followed by an equally sudden increase of the effusion. The diarrhœa in this disease is always attended with griping pain, and is best treated by leeches, blisters, fomentations and anodyne enemata.

To enter fully into the details of treatment, in a disease which often endures for months, would occupy too large a space; I shall limit myself, therefore, to a few general observations on the subject. The remedies of most importance are blood-letting, blisters, diuretics, mercury, and iodine; upon the judicious adaptation of these remedial agents to each stage and period of the disease, and to the constitution and condition of the patient, depends, in a great measure, the success of the treatment. The copious detractions of blood, which are essentially necessary in ordinary peritonitis, are rarely admissible in the strumous form; from the constitution of the patient, and the chronic nature of the malady, it will be seldom found necessary to employ any but topical bleedings; and, when this is effected by the application of leeches, care must be taken to guard against the too long continued and profuse oozing of blood which, in strumous individuals, is apt to arise from the bites of leeches. It is during the earlier and febrile stage that blood-letting is indicated; this should be followed by blisters applied over every part of the abdomen, and so managed, if possible, as to insure full vesication. When the more acute and febrile symptoms shall have yielded to these measures, then diuretics may be advantageously administered, and those alone must be selected which are least irritating to the stomach and bowels. Digitalis, with nitrate of potash, I have generally found most useful; but, in some cases, the continual recurrence of diarrhœa prevents the administration of any neutral salt whatsoever; digitalis, I have thought, acts more efficiently in the form of infusion than in that of tincture. But, of all the curative agents we possess, that which is most

valuable is mercury; of all diuretics it is the best: in some cases it must be resorted to at once; in others it is necessary, as a preparatory step, to subdue the more acute symptoms by detractions of blood. It seldom happens that we can venture upon its full internal exhibition; it is by inunction through the skin that it must be introduced into the system; by this mode of administration all its beneficial effects will be obtained, and additional irritation of the intestinal mucous membrane avoided. A scruple or half a drachm of mercurial ointment should be rubbed in, at intervals of four or six hours, until it act perceptibly on the system. In many instances I have noticed a marked subsidence of the symptoms, a copious secretion of urine, and a diminution of the abdominal distention, to have been coeval with the first perceptible effects of mercury upon the constitution. In some cases I have directed mercury and iodine to be rubbed in conjointly, by adding three grains of the proto-ioduret of mercury to a scruple or half a drachm of axunge; and I have thought that the inunction of this compound has produced more rapid and salutary effects upon the disease than the pure mercurial ointment; I can, moreover, assert that in some few cases, in which the mercurial ointment alone has failed, this combination has been effective. It is apt, however, to irritate the skin, and in some individuals to such an extent as to produce universal erythema, and to render it necessary to abandon its use: in every instance the frictions should not be applied too frequently over the same surface; by directing the ointment to be rubbed in sometimes on the thighs and legs, sometimes on the back, sometimes on the abdomen, and sometimes on the arms, its irritating effects may be obviated. In the more advanced stages of this affection, and in cases which have been neglected at their commencement, or where other remedies have failed to arrest the disease, iodine internally administered will be found a valuable auxiliary in the treatment. Its utility is more obvious when it acts as a diuretic. The mode of administration, which I have generally found most advantageous, is that of giving the

hydriodate of potash, largely diluted, in combination with liquor potassæ or Brandish's alkaline solution. I have found this combination particularly useful when given in rennet whey or ass's milk; it sometimes acts as a powerful diuretic, and effects a rapid absorption of the effused fluid. On account of the irritability of the mucous membrane, which frequently characterizes this affection, it is advisable to begin with small doses of the hydriodate of potash, and, if well borne by the stomach, they may be gradually increased until a full and decided action upon the system be attained. The adaptation of the nutriment to the weak digestive powers of the stomach requires the exercise of judgment and careful management. During the earlier stages of the disease the diet must be liquid and farinaceous; all solid and exciting food exasperates the symptoms. At the more advanced periods a more generous diet is absolutely necessary; and in many instances the vital actions must be stimulated by diluted wines. Though extremes are to be avoided, we should remember that this disease is one which appertains to that state of constitution, which requires to be well supported by the most nutritious food. At the approach, or during the period of convalescence, change of air and chalybeates are often singularly beneficial. Much and valuable light may be thrown on this disease, by contrasting it with affections of the same tissue in other parts of the body. The analogy between strumous inflammation of the peritoneum and the same disease affecting the pleuræ, the pericardium, and the serous membrane of the brain, is very striking; they all occur in constitutions of the same kind and character; they run the same course, and are amenable to the same general treatment. Observations upon effusion into these cavities I hope, ere long, to lay before the profession.

An analogy may also be traced between this disease and some affections of the larger joints in strumous constitutions; the analogy is perceptible in the characters and progress of the inflammation, in the pathological results, and in the treatment. On the value and utility of mercury we have already, at some

length, dwelt; for the first successful application of this powerful remedial agent to the strumous affections of the larger joints, the profession are undoubtedly indebted to Dr. O'Beirne, President of the College of Surgeons; and much merit is due to him for this excellent innovation in practice. Formerly an opinion prevailed that, in the treatment of strumous disease, mercury was inadmissible; experience has proved that, when judiciously employed, it is a remedy of surpassing value; its abuse and misapplication only having brought it into unmerited disrepute. In no instance is this more remarkably exemplified than in those unfortunate scrofulous individuals, who, affected with syphilis, are subjected to long-continued and ill-managed courses of mercury by which their health and constitutions are completely undermined.*

Supplementary Remarks. By Dr. Churchill.

[Read at a Meeting of the Obstetrical Society, Thursday, Dec. 1, 1842.]

The disease in question is an inflammation of the serous membrane of the abdomen, accompanied with effusion, and attacking persons of a strumous diathesis. It may occur either in an acute or chronic form, as the cases on record prove; but at present I shall nearly confine myself to the description of the latter variety of the affection.

Before proceeding to the consideration of the disease itself, I may as well lay before you a short notice of the authorities who have described it.

Dr. V. Rosenstein (1771), in the chapter on diarrhœa, observes that "a diarrhœa, when carried too far, ought to be

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* The cases and remarks which occupy the preceding pages were given to Dr. Churchill, on the occasion of his preparing a paper, to be read at a meeting of the Obstetrical Society; they were hastily thrown together, and not designed for publication. It is by desire of Dr. Churchill, that they have now been published.

stopped, otherwise the intestines would lose their digestive faculty, by being too much softened and relaxed; those fluids requisite for digestion are carried off, by which the blood, not being diluted with a new and suitable milky juice (chylus), grows acid and unfit for the support of the body, which then pines away, its strength diminishes, the legs and feet swell, and either a consumption *or a dropsy* at last closes the scene."*

Dr. Underwood (1784) has a chapter on anasarca and ascites, in which he states that "infants previously in bad health, and especially such as have been prematurely weaned or fed upon too thick victuals, not unfrequently have induration of the mesenteric glands, and the *complaint may be followed by dropsy.*"†

It is difficult to say positively whether the disease under notice is attended to in these scanty notices; but still less satisfactory are the observations of Mr. Brousset, Mr. Parkisson,‡ Dr. Hamilton,§ and Mr. Marley.‖

No mention of such a disease is to be found in the works of Willich, Armstrong, Herdman, Clarke, Dewees, Maunsell, and Bull.

Dr. Pemberton has given an admirable description of the ordinary form of chronic peritonitis, but which differs in many respects from the disease in question.¶

Dr. Baron, in his Inquiry into the Nature of Tuberculated Accretions of the Serous Membranes, has enumerated a series of symptoms resulting from a tuberculous condition of the peritoneum, which bear some similarity to the subject of this paper.**

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* Diseases of Children, p. 47.

† Diseases of Children, Edition, 1827, p. 432.

‡ Med. Admonitions, p. 214. § Diseases of Children, p. 166.

¶ On Diseases of the Abdominal Viscera, p. 94.

** Page 131.

Dr. Burns* remarks, "that peritoneal inflammation or enteritis is not an uncommon complaint with children;" and after describing shortly the usual symptoms, adds, that "a less severe degree of inflammation is productive of a *general secretion of purulent fluid*, swelling the belly like ascites, and attended with hectic fever."

The article in the Cyclopædia of Pract. Med. on Chronic Peritonitis†, by Dr. Mac Adam, is a very fair compilation from the best authorities.

Dr. Abercrombie, in his excellent work on Diseases of the Abdominal Viscera,‡ has treated the subject with his usual simplicity and clearness. He states, that "chronic peritonitis occurs most frequently in young persons from 10 to 15, and is less common in infants and children, though in them it is also met with occasionally, and is generally combined with diseases of the mesenteric glands."

But by far the most accurate delineation of the affection, to which I wish to draw your attention, will be found in a paper by Dr. Gregory in the Med. Chir. Transactions.§ The description he gives is sufficiently minute, and no doubt can be entertained of its accuracy by those who have had cases under their own care.

I shall now shortly detail the first case which occurred to myself, and for the diagnosis and successful treatment of which I am under obligation to Sir H. Marsh.

Mary ——, æt. 6, a healthy child, of delicate fair complexion, fair hair, &c., about December, 1840, was observed to be somewhat unwell. She suffered from occasional attacks of diarrhœa, which after a time either subsided, or were relieved by the usual remedies. Occasionally she complained of shooting pains through the abdomen, coming on irregularly, and lasting but a short time, but not accompanied with tenderness or swelling. Her appetite became delicate and fastidious, with some thirst.

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* Midwifery, p. 810, 9th Ed.

† Vol. iii. p. 300.

‡ Page 191.

§ Vol. ii. p. 259.

The pulse was scarcely quickened; her countenance became pale, and she became thin. Matters continued in much the same state for about a month—occasional attacks of pain and diarrhœa, with loss of appetite, &c.; but after this time I observed that the abdomen became gradually swollen, with a distinct sense of fluctuation, uneasiness on motion, but no pain on pressure. The pulse rose to 130, and there was a certain amount of fever, especially in the evening, with an occasional rigor. The emaciation had increased, and the other symptoms continued much the same.

By Sir H. Marsh's advice, Hydr. c. Cretâ, gr. ii. P. Jacob. gr. i., was given every four hours. The abdomen was well rubbed with ung. hyd. fort., and she took a warm bath at bedtime. This treatment was continued a fortnight without any manifest improvement, and without the constitution being affected by the mercury. The transient pain, the swelling with fluctuation, the quick pulse, the fever with exacerbations in the afternoon and drowsiness, all continued. The appetite was rather improved. She had become by this time both thin and weak; was very unwilling to exert herself, and complained of abdominal uneasiness upon moving about.

A blister was then applied to the upper part of the abdomen, and dressed with ung. hyd.; frictions with a scruple of the same ointment, were used twice a day, and the internal medicines omitted.

Under this treatment she shortly began to amend. The pain returned less frequently, and at length ceased; the abdomen gradually though slowly diminished in size, until fluctuation was no longer perceptible; the bowels became regular, the pulse tranquil, the fever disappeared; in about six weeks from the commencement of the treatment she was convalescent. She is now perfectly well.

I have since seen several cases of the same kind, which were benefited by similar treatment.

Of the few French authorities on diseases of children, I find no mention of chronic peritonitis by Raulin, Chambon, or Capu-

non; M. Denis, indeed, relates some cases of peritonitis in very young children, but they were examples of the acute form.

M. Billard gives a short notice of chronic peritonitis, and relates the following case:

Josephine Perrine, æt. 10 months, of a good size, but thin and spare, had already cut the two incisor teeth of the lower jaw, when she was suddenly seized with dyspnœa. This child, usually lively, had become morose and fretful. She entered the infirmary on the 22nd January, 1826. The abdomen was tympanitic, the respiration a little difficult, and was indistinctly heard at the upper part of the right side of the chest; the tongue was dry, pulse small, skin burning; she was affected with diarrhœa, consisting of green and mucous fæces. On the 23rd the diarrhœa became more light coloured. On the 24th the same general symptoms, but without fever; tension of the abdomen, facies hippocratica, forehead wrinkled. On the 26th deglutition difficult, retching whenever drinks were given, very feeble. The isthmus of the fauces appeared of a bright red. Death took place on the morning of the 27th.

Post Mortem Examination.—Body considerably emaciated; general paleness of the integuments; nearly two oz. of yellow serosity were found in the abdomen. Numerous and firm adhesions existed between the transverse portion of the colon and the great curvature of the stomach. Some of the convolutions of the small intestines were likewise adherent, but in a less solid manner. The mucous membrane of the stomach was of a pale rose colour; that of the small intestines was covered with red striæ, and a number of slate-coloured spots existed in the whole length of the colon, &c.*

Although the preceding case is certainly one of chronic peritonitis, it is by no means so satisfactory as those related by Sir H. Marsh; the effusion not being extensive, almost precluded its diagnosis during life.

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* On Diseases of Infants, Trans. by Dr. Stewart, p. 354.

After this short sketch of the literary history of the disease, we may now proceed to the consideration of the disease itself.

Strumous inflammation of the peritoneum, with effusion, may present itself either as an acute or chronic disease; the latter may be an evident consequence of the former, or it may occur without our being able to recognize any preceding acute stage, coming on so gradually, in fact, that we may not be aware of the nature of the disease until it is fully developed. As M. Dugès observes, "there may be occasional pains, colics, irregular attacks of diarrhœa, emaciation, paleness, for weeks, or even months before the disease is fully established.*

From the earlier and more prominent symptoms being referrible to the mucous membrane of the intestinal canal, the real affection may be overlooked, and the fatal results attributed to the diarrhœa.

This may explain the very spare notices to be found in authors, even though, as Dr. Abercrombie has stated,† the disease is by no means very rare.

The age most obnoxious to the disease is, as Sir H. Marsh observes, "between early childhood and puberty, and for a few years after that period;" it is rare to meet with it in infancy, or after the age of 30.

I have already said, that the disease is almost confined to children of a strumous habit and lymphatic temperament; and I may add, that it is frequently complicated with, and perhaps a consequence of, mesenteric disease.

Causes.—Various exciting causes have been mentioned as giving rise to the disease—such as bad diet, cold, privations, excesses, dentition, constipation, &c., and doubtless with truth; but nevertheless, in the majority of cases, it will be extremely difficult to say exactly what is the exciting cause. In the cases which have fallen under my own observation, it appeared to be

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* Dict. de Med. et de Chir. Prat. vol. xii. p. 595.

† Diseases of the Abdominal Viscera, p. 191.

the result of an extension of irritation from the intestinal mucous membrane.

It also occurs as one of the sequelæ of febrile diseases, such as scarlatina, measles, &c. It may be worth remarking, that none of the children in whom it occurred, at an early age, were born of mothers who had suffered from puerperal fever.

Symptoms.—From what has already been said, it will be gathered that the mode of invasion varies widely. In one class of cases the patient labours under diarrhœa for a considerable time with or without pain; the appetite is pretty good, the temperature natural, and the pulse quiet; but at length—it may be weeks or months—we hear complaints of a sensation of pricking, or of paroxysms of pain, and a feeling of tightness in the abdomen, which, upon examination, is found to be more or less swollen.

In other cases there is a certain amount of pain from the beginning, occurring in paroxysms, with perfect intervals, and though at first limited to one part of the abdomen, yet by degrees spreading over and occupying the whole.

Again, as Dr. Abercrombie remarks, "in a very important modification of the disease there is no complaint of pain; the patient merely speaks of a feeling of distention, with variable appetite and irregular bowels, and with these complaints becomes progressively emaciated. In many cases, indeed, the early symptoms are so slight, that no attention is paid to them until the emaciated appearance of the patient excites alarm. The abdomen, on examination, is probably found tumid, and in some degree tender in various parts; and, upon questioning the patient, it is found that there has been some degree of pain for weeks and months. In other cases there has been no actual pain, but a feeling of tenderness, which gives rise to uneasiness on pressure, or when any part of the dress is tight over the abdomen; but in many cases the disease steals on to an advanced period without any complaint of tenderness or pain."*

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* Diseases of the Abdominal Viscera, p. 192.

The observations of M. Andral* are confirmatory of Dr. Abercrombie's remarks; Dr. Gregory, however, states that tenderness on pressure is present from the commencement.†

So much for the mode of invasion. Sooner or later, in the majority of cases, the patient complains of pain, occurring most frequently in paroxysms of varying intensity and duration, with intervals of complete relief; beginning in some one part of the abdomen, and gradually spreading over the entire. In the words of Dr. Gregory, "the attacks of acute pain occur in paroxysms at first, not oftener perhaps than once or twice in a day; but, as the disease advances, they increase in frequency, and at the same time in violence. I have seen them happen as often as once in ten or fifteen minutes; they do not last long, and immediately after an attack the child appears lively, as if nothing ailed it."‡

There is frequently, perhaps generally, a certain amount of tenderness on pressure, especially at the part to which the pain is at first limited, though it is not very remarkable in many cases. The patient almost always complains of uneasiness on attempting to walk or stand, and in some cases finds it impossible to stand erect.

After an uncertain interval, the patient complains of a feeling of distension, and requires the dress to be left loose; and then, if an examination be made, the abdomen will be found more or less swollen. Percussion generally yields a dull sound, but not always, for when the bowels are much disordered, they sometimes become tympanitic.

Fluctuation is, I think, perceptible in all cases, if the examination be carefully made; but it requires especial care with young children to guard against the action of the abdominal muscles, and the natural elasticity of the integuments. The best mode is to lay the child on its back, and accustom it for a short time to the presence of the hand upon the abdomen; then, placing one

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* Mal. de l'Abdomen, Chir. Med. vol. iii. p. 587.

† Med. Chir. Trans. vol. ii. p. 263. ‡ Med. Chir. Trans. vol. ii. p. 264.

hand, with the fingers separated, on one side, and percussing very gently with the other, the muscles will not be excited into action; and, if fluctuation be perceptible with the second or third finger, we may be certain of the presence of fluid; for the pressure of the forefinger upon the skin effectually arrests the vibration which results from its elasticity. I have dwelt rather minutely upon the mode of examining the abdomen, because in many cases, from the paucity and obscurity of the symptoms, our diagnosis must chiefly depend upon the presence or absence of fluctuation.

The enlargement of the abdomen is not always equable; in some cases, especially in the commencement, the umbilical region protrudes. As the effusion increases the entire abdomen enlarges, loses its softness, and becomes tense and hard, though occasionally unequally so.

The skin of the abdomen is hot and dry, and has the appearance of being stretched and diminished in thickness. In very chronic cases large blue veins are visible traversing the abdomen.

When the mesenteric glands are diseased, it is possible in some cases to detect their enlarged condition, by making a careful examination at an early period, before the abdomen is much distended.

In some rare cases the intestinal canal preserves its integrity for a long time; the tongue is pretty clean, the appetite much as usual, the bowels regular, or perhaps rather constipated; but, in the large majority of cases, we find the tongue white, loaded, and flabby; more or less thirst; the appetite irregular and fastidious, sometimes increased, more frequently impaired or lost altogether; the bowels relaxed or constipated, perhaps alternately; the stools fœtid and of a whity-brown or bluish colour. "At first," says Dr. Gregory, "the stools are green, slimy, or fœtid; but, when the disease has existed about six weeks or two months, they will be found to consist of a whitish or whitish-brown matter, of the consistence of thin pudding; nor do the evacuations differ more in *quality* than they do in *quantity* from those in health.

The quantity passed by the child in twenty-four hours, and that without the aid of medicine, is often enormous; and I have seen it taken notice of by the parents as greatly exceeding what the child could have taken in by the mouth." "This state of the bowels frequently continues for six weeks or two months, the body of course wasting the whole time, until diarrhœa at length comes on, attended with petechiæ, which, in the course of three or four days, puts a period to the child's life."*

When the effusion is considerable, the breathing may be rendered rapid and laborious, owing to the pressure upon the diaphragm. There may be another cause for the dyspnœa, however, for, as in one of Sir H. Marsh's cases, it sometimes happens that the serous membrane of the chest is affected, followed by effusion into its cavity.

At first the pulse is scarcely altered; but, as the disease advances, it increases in frequency, varying from 100 to 140, but is diminished in strength and fulness. The heat of skin is increased.

In almost all cases, when the disease is fully established and the fever marked, there are distinct evening exacerbations of a hectic character, during which the pulse rises, the temperature augments, the face is flushed; there is much thirst, and the urine is high coloured, &c. After this state has continued an hour or two, it gradually subsides.

Generally speaking, throughout the course of the disease, the secretion of urine is diminished in quantity.

It is hardly necessary to add, that so formidable and long continued a disease is attended with great emaciation and exhaustion. As the disease progresses, the local symptoms are aggravated; the quick pulse and fever, with exacerbations, more remarkable; the weakness and incapability of exertion more extreme; the patient, in short, is utterly worn out.†

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* Med. Chir. Trans. vol. ii. p. 265. † Burns' Midwifery, p. 811.

Terminations.—The course of the disease is generally very long; it may be prolonged for several months, and then may terminate variously.

1st. In resolution. Under proper treatment the inflammation may be subdued, and the effusion absorbed, and this termination is the more practicable the less the mesenteric glands are affected. In such cases we find the unhealthy condition of the intestinal canal gradually corrected, the appetite return, and the fæcal evacuations become natural; the pulse diminishes in frequency, the fever and exacerbations cease. The last symptom remaining is the abdominal distention; but this, too, gradually subsides until fluctuation can no longer be detected. These successful cases, however, are not the most common.

2nd. In a circumscribed collection of the effused fluid and its final evacuation, with more or less subsidence of the original affection. Under such circumstances patients have been known to recover. Dr. Burns mentions a case of this kind;* and Dr. Abercrombie states that the matter may make its way through the abdominal parietes or the inguinal ring.† An interesting case of this termination was related to the society, last session, by my friend Dr. O'Reilly. Such cases, however, are very rare.

3rd. In death. The majority of cases terminate thus at different intervals from the commencement of the attack. Instead of diminishing, the symptoms progressively increase in intensity. The abdomen is very tense and tender, the fever high, the pulse very quick and feeble, the thirst considerable, the diarrhœa persistent, the exacerbations severe, the emaciation and exhaustion extreme. The countenance becomes sunken, the extremities cold, the surface covered with a clammy sweat, and occasionally dotted with petechiæ, and, at length, after a prolonged period of suffering, death closes the scene. In some

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* Midwifery, p. 811.

† Disease of the Abd. Viscera, p. 195.

cases the disease is brought to an earlier termination by ulceration and perforation of the intestines, which converts the chronic peritonitis into acute.

Post Mortem Appearances.—Occasionally the vessels of the peritoneum are injected, though sparingly; there is more or less serum effused into the abdominal cavity, with shreds of lymph floating therein.* The intestines are more or less agglutinated together, and often thus assume the appearance of sacs of matter. Where there has been perforation of the intestines, we find fæcal matter mixed up with the serum, and can generally detect the communication with the intestine through which it has passed. The peritoneum itself is often thickened, and coated with a layer of lymph; sometimes it is studded with miliary tubercles, or has tubercular matter deposited upon it. In some cases the mucous membrane is intact, in others, ulceration has advanced to different stages. The mesenteric glands may be free from disease, or they may be enlarged, and contain tubercular matter.

Dr. Abercrombie states as the result of his experience, that "on dissection the bowels are generally found more or less extensively glued to each other, and to the parietes of the abdomen, and the omentum is often involved in the disease. There is sometimes ulceration of the mucous membrane, and not unfrequently the peritoneum is in many places much thickened, and studded with small tubercles; in some cases again there is great thickening of all the coats of the intestines at particular parts. In many cases there are left amid the adhering portions of the intestines, cavities full of purulent matter, which is generally of an unhealthy or scrofulous character. There is frequently disease of the mesenteric glands and of the liver or lungs."†

Dr. Gregory observes that "on cutting through the parietes

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* Burns' Midwifery, p. 811. Denis, Mal. des Enfans Nouveau-nés, p. 119.

† Diseases of the Abd. Viscera, p. 193.

of the abdomen, all traces of abdominal cavity will be wanting. The mesentery, bowels, and peritoneum lining the parietes, will be found united together into one mass. The peritoneum, in all its duplicatures, appears thickened, and on cutting through the diseased mass, very large quantities of scrofulous matter will be found. The mucous membrane of the bowels, particularly of the small intestines, appears ulcerated in various places, and at these points of ulceration the convolutions of the intestines communicate, so that instead of forming one line of canal, as they will continue to do even in advanced stages of chronic peritonitis, they constitute a mass of tubes communicating freely with each other, and with the thickened and ulcerated peritoneal membranes by innumerable openings. The matter which will be found both within and without the mucous membrane, will be observed to correspond exactly with that which was passed during life by stool."*

Diagnosis.—When pain and swelling of the abdomen, with fluctuation, are present, the diagnosis will be easy ; but in those cases in which there is no pain, and but slight tenderness, with little disorder of the digestive organs, there may be great difficulty. Our principal guide is the enlargement of the abdomen, which ultimately always occurs, and the fluctuation, which, by a little care, may generally be perceived. When there is much dyspnœa, or when the diarrhœa is severe, we must be on our guard against supposing the disease limited to the chest or mucous membrane of the intestines. We know that both may be seriously involved, concurrently with the peritoneal membrane. The same may be said of the mesenteric glands ; they may also be diseased ; but when they are affected alone, we shall find neither the abdominal swelling (at least to the same extent) nor the fluctuation.

Prognosis.—The prognosis, in the majority of cases, is unfavourable. Where the peritoneum alone is affected, the patient

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* Med. Chir. Trans, vol. ii. p. 266.

has certainly a chance of recovery ; but if the mesenteric glands, or the mucous membrane of the intestines, or the pleura, be involved, the case will probably terminate unfavourably.

Treatment.—The treatment usually recommended is comprised in a few lines—short in proportion to its hopelessness. Leeches to the abdomen, fomentations, purgatives, of which calomel forms one of the ingredients, alteratives sometimes, tonics, chalybeates, absorbents, &c. Such is the catalogue usually given. The question, however, deserves a little more detail, inasmuch as a certain number of the cases are curable, if we are called in reasonably early.

General bleeding, I believe I may say, is never required ; but when the pain is distressing, especially if there be parts of the abdomen tender on pressure, we may afford relief by the application of a few leeches ; to be repeated, if necessary.

The abdomen should be fomented with a decoction of poppy heads, twice a day, or oftener, if the paroxysms of pain be frequent ; or a piece of lint wet with laudanum may be laid over the abdomen ; and every night, or every other night, the patient should take a warm bath.

If the bowels be confined, a dose of castor oil, or Gregory's powder, must be given occasionally ; but if diarrhœa be present, it may generally be checked by the pulv. cretæ cum opio, or any other astringent combined with an anodyne. Dr. Gregory advises laudanum for this purpose.

But our principal reliance is upon mercury, given so as to affect the gums, if possible. I believe that the credit of thus administering mercury in this disease is due to Sir H. Marsh, as I have found no allusion to it in any authority. It may be exhibited internally or by inunction ; in many cases the latter is preferable, as when diarrhœa occurs, the bowels are too irritable. A scruple of the strong ung. hyd. should be gently rubbed in over the abdomen, night and morning, and continued until the gums are touched, or the disease shows signs of yielding to the treatment.

Blisters to the abdomen are very useful; they should be small, and applied successively to different parts, and dressed with the blue ointment.

Should the disease give way, the moment the febrile action ceases will be the proper time to commence the use of tonics; and the diet, which up to this period must be bland and unstimulating, though nutritious, may consist of broths, meat, and a moderate quantity of wine or porter.

During convalescence, the patient must be confined to the house at first, and only by degrees allowed to take air and exercise. The clothing should be warm, with flannel next the skin. At a more advanced period of convalescence, a removal to the country will be of essential benefit.

Art. II.—*Case of Tapping of the Brain.* By Richard G. Herbert Butcher, L. R. C. S. I., M. R. C. S. L.

TO THE EDITOR OF THE DUBLIN JOURNAL OF MEDICAL SCIENCE.

"Sir,—If the accompanying manuscript be worthy of a place in your valuable Journal, you will greatly oblige me by its insertion. It refers to the operation of tapping the brain in cases of acute hydrocephalus.

"Yours truly,
"Richard G. Herbert Butcher,
L. R. C. S. I., M. R. C. S. L."

A few mornings since I heard the question asked, "Is the operation for tapping the brain ever successful?" Now, as the following case bears materially on this point, I am induced to submit it to the public, in the ardent hope—nay, I would say more, the almost certain conviction, that if a similar treatment be adopted in these cases, many young lives might be saved. In an Essay read at the Dublin Medico-Chirurgical Society, a few years since, I cursorily noticed this case; since then repeated

post mortem examinations have confirmed me in the propriety of the operation in certain cases. It comes in as a last resource, when all else fails. Though purgatives, blood-letting, and cold to the head, do not arrest the effusion (for it will continue, from deranged action in the vessels themselves), still they may suppress the inflammatory disposition of them, which conduces to that state. Now here, if the fluid is in large quantity, it will not be absorbed, but, by its pressure, act mechanically in augmenting the turgid condition of the vessels of the part, and thus tend towards the diseased action being continued, until it ultimately terminates in ramollissement. But this will not be so in the majority of cases if the fluid be removed, for it will be much easier to restore the healthy action of the vessels, vessels so peculiarly modified in their structure and anatomical arrangement.

That ramollissement does not come on till a later period than is generally supposed, I have verified by dissection. In eight cases that I have examined of acute hydrocephalus, where the head was unusually large, and where the children were carried off in a few days by infectious diseases, not in any of those cases was there softening or ramollissement of the structure of the brain, though the lateral ventricles were enormously distended with fluid.

There is no doubting the possibility of serous fluid being absorbed from the ventricles of the brain. We are warranted in this supposition, both by the analogy of other serous cavities and by what is actually observed to take place in the brain itself; but, where this fluid is in very large quantity, the *power of absorption is destroyed;* and the patient dies from the structure of the brain becoming secondarily involved. The following case will show the advantages of the operation in this state of things.

Maria Burns applied for advice at the South Infirmary, Cork. She stated having had three children, "two of whom died of water on the brain;" the third, she apprehended, was affected in a similar manner, and entreated that something would be done

that might afford any chance of relief. Upon examining the patient, a boy 16 months of age, his head was almost transparent, and presented, in different situations, patches where the ossific matter was not deposited, its place being supplied by the common integuments. The sutures were very considerably separated, being from half to three quarters of an inch asunder. The head measured in the fronti-occipital circumference thirteen inches and a half; from ear to ear, across the vertex, nine inches; round the chin and across the vertex nine inches three quarters; the pupils were greatly dilated, and insensible to the stimulus of light. Now and then the child would scream out in the most violent manner, being then immediately attacked with convulsions, which the mother said came on frequently for four days previous to her application for relief at the hospital. Here nothing could be expected from the ordinary methods of treatment; therefore, Dr. Woodroffe determined on drawing off the water.

The integuments having been divided with a lancet, a trochar was introduced about three quarters of an inch external to the mesial line, near the junction of the edge of the fontanelle with the margin of the parietal bone. The instrument being inclined a little inwards, in this manner it was directed into the lateral ventricle of the right side; no sooner was the stillet withdrawn than the fluid flowed out freely through the canula. The quantity drawn off amounted to eleven ounces. After the discharge of so large a quantity of fluid, the head lost its tension and globular form, and became so flaccid, as to allow the remaining quantity of water to gravitate backwards, giving the head a very elongated appearance. To support the parts a double-headed roller was applied loosely, the edges of the incision being previously brought together with adhesive plaster. The child sunk very low immediately after the operation; however, after some time, the urgent symptoms were suppressed. From this period up to four weeks after, every thing was doing remarkably well, the head filled again; but not to one-half of its

original size. The operation was again performed on the left side, in the same situation as on the right. The child began visibly to improve; no convulsions whatever occurred after the first operation; four weeks more elapsed, and the head was not near the size it presented before the second operation; so much was it lessened, that another operation was deferred for a future period. At this time ten weeks had elapsed; the child was free from convulsions; the eyes were quite sensible to light, and the little patient did not exhibit any lethargic symptoms. In four days after he began to get uneasy and restless; three more had not passed by when he was seized with convulsions that terminated in death. I was immediately called to see the child; and having accused the mother of neglecting it in some way, she acknowledged to have given it wine regularly for five days before, stating, as her reason for doing so, "she thought it would hasten the cure, and not do him any harm, he was so much better."

On examining the head after death, the different places where the ossific matter was wanting were filled up by a membrane, which was almost entirely converted into bone. The sutures were greatly closed in, being not more than the eighth of an inch apart. All the parts within the lateral ventricles appeared in a healthy state; there was no softening of the structure of the brain whatever; no over-gorged condition of the vessels, or increase in vascularity.

In this case I think there are some points particularly worthy of attention. First—from the time of the first operation until eleven weeks after, no convulsions ensued. Secondly—four weeks from the first operation the child was sensible to light; and lastly, the relaxed state of the integuments allowed the process of ossification to advance in a most remarkable degree. The treatment after the operation consisted chiefly in cold to the head, local blood-letting, purgatives of calomel and chalk.

There is no doubt in this case death was caused by the injudicious management of the mother; but, if the reader should

continue sceptical as to the propriety of the operation, I would refer himtoa case treated successfully by it, in the ninth volume of the Medico Chirurgical Transactions.

ART. III.—*A short Treatise on the Preservation of Infants by Inoculation.* Translated from the Chinese by W. LOCKHART, Esq., M. D., Macao.

[Communicated by Dr. CHURCHILL.]

TO TH EDITOR OF THE DUBLIN JOURNAL OF MEDICAL SCIENCE.

"SIR,—I beg leave to forward to you, for insertion in the Dublin Journal of Medical Science, the translation of a Chinese tract on Inoculation, which appears to me of considerable interest. The translation is from the pen of my friend, Dr. Lockhart, who some time ago introduced to us the Chinese Treatise on Midwifery.

"I have the honour to be, &c.,

"F. CHURCHILL."

SMALL-POX arises from poison introduced into the system from the mother's womb. The occurrence of this disease but once during life shows that its source is a poison derived from the womb. It assumes two forms—the mild and the malignant (or favourable and unfavourable), according as the external impression, which causes the disease to declare itself, is weak or strong. This external impression may arise from climate—from taking cold—from fright, or from going to a place where the disease already prevails; and does not at all depend upon the strength of the poison received from the womb. Formerly there were twins (boys), one had the severe form of small-pox, and died; the other had the mild form, and recovered. How could they come from the same womb and have a different poison? People in the extreme north have not small-pox; but, if they come to the south, then it appears. How can it be possible that, in the same person, there should be a different poison in the former or latter place? This clearly proves that the breaking out of the disease

depends on external causes. Thus, during coitus, if there be not fire or heat, there will not be impregnation; if there be fire, then there is also poison; and this poison lies hid in the kidneys and viscera. This is the case in all persons, and there is no original difference, as slight and severe; but the poison lies concealed, and its breaking out depends entirely on external causes. If the impression be strong, the disease will be malignant; if slight, then the disease assumes the mild form; but, if no external cause be applied, the disease lies hid, and never declares itself. Among the northern tribes, where the disease never exists, the climate is cold, and no cause being applied, the disease is concealed within; but, if they come to the south, the poison is excited by the warmth of the climate, and declares itself. In the case of the twins having the mild and malignant forms, this arose from the external impression or cause being in one case strong, and in the other slight, and assuredly not from any difference in the poison itself. What truth can there be in the one-sided view, that the difference arises from the original poison; this is mere nonsense, and without foundation, and makes no reference to the injury arising from external causes. Thus people wait till the disease breaks out, and then try to save the child; and by not seizing the means of prevention beforehand, cause many children to die prematurely. The truth is, that the breaking out of small-pox depends on external impressions; thus disease induces disease, and this eruption makes its appearance. The cases that are mild are but few, while those that are malignant are numerous. The ancients possessed the knowledge of inoculating for (or planting) the small-pox; it is handed down from the time of Chin Tzung, of the Sung dynasty (1014, A. D.), and was invented by a philosopher of Go-mei-shan, in Sze-Chuen. It obtained the credit of being very advantageous, because that in a hundred cases it was ever successful, and the plan was found to be good and excellent. It had its origin from the fact that small-pox, excited by external impression, is a consequence of disease; but inoculation must be per-

formed where there is no disease. Small-pox may break out at any season; but, for inoculation, that season can be selected which is most advantageous for the purpose—when there is no disease in the system, and good lymph can be obtained for use; and thus this severe pestilence will be changed, and have a propitious termination. Why can this not be fully understood? People do not examine carefully into the matter, but rather follow on in their own mistaken path. This is either because they do not know the value of the plan, and dare not inoculate, or they do know the excellence of it, but do not choose to practise it. Then some day or other the disease suddenly breaks out of itself in a virulent form, and their repentance comes too late, as the consequence of their perverseness. Just as if a person, who had indigestion, were to refuse to eat food. In respect to inoculation, out of ten thousand cases not one casualty will occur. Perhaps in one hundred thousand one or two fatal cases may accidentally be met with, arising perchance from bad management in the family, or because the inoculator has not carefully examined into the state of the patient. Men will not know their own errors, but place a ban upon inoculation, and contentedly wait till the disease breaks out, and proves fatal. What is the difference between these and one who, having indigestion himself, were to prohibit the use of food to all others. It ought to be known that there is nothing to fear from inoculation, but that the disease spontaneously arising is very fatal. This is all very clear; why will people not believe it. To discard this excellent plan, and sit waiting for the calamity, is much to be deprecated; it ought to be pressed on the attention of all as a most beneficial thing for their adoption, and all persons that have children ought to confide in it, so that the lives of their children may be preserved.

1st. *Variolous Lymph.* — This is the matter that comes from small-pox pustules. Those who inoculate need seek for no other remedy, but may place all their reliance on this operation, which is, in fact, the leader on of the poison from the womb: the whole of the circumstances of the process are very important. In respect to the quality of the lymph, a child ought

to be chosen, where the mild form of the disease has existed. It is immaterial whether the disease has arisen spontaneously or from inoculation, all that is requisite is to choose good pustules. The pustules ought to be sparse, round, or pointed, and of a clear red colour; the fluid abundant; the crust which comes away, like wax clear and consistent. This is to be put into a porcelain cup, and closely covered, and then kept in a clean, cool place. If the vessel be foul, the lymph will be spoiled; if kept too long, it loses its qualities, and becomes weak. The lymph taken in spring and autumn will keep one month and still be fit for use; taken in winter, it will be good for forty or fifty days. When the lymph is wanted for use, several pustules are to be chosen, and rubbed down in a cup with a piece of bamboo, or a twig of willow; then taking a fragment of cotton, rolled up into the shape of a date seed, with this absorb the whole of the moistened lymph, and insert it into one of the nostrils, in the boy on the left side, in the girl on the right. For inoculating a boy of a year old, use two or three pustules; for one three or four years old, use five pustules, or crusts. This is called the *watery inoculation;* it is safe, and may always be trusted. The cotton being placed in the nostril, some person must watch lest the child withdraw it, or it be ejected by sneezing in which case it must be immediately replaced without delay. When the pellet, saturated with lymph, has remained in the nostril twelve hours, it may be withdrawn: if it be warm weather at the time, it may be removed a little earlier; but if cold weather, it must remain a while longer: the spirit of the lymph enters the body, and gradually diffuses itself through the fine parenchymatous viscera. After seven days fever appears; three days afterwards the spots show themselves; three days after this the spots become pustular; in three days more the crusts form, when the business is completed. There are also other modes of inoculation; thus the cotton may be moistened with the variolous lymph, and this is called *Lymph Inoculation.* The pustules being broken, you take the lymph; the child must be ordered to hold its mouth, but this is difficult to bear.

There is also a mode by putting on the clothes of a child affected with this disease, and soiled by lymph; this is called *Clothes Inoculation.* Also by taking the crusts, drying them, pounding them, and then blowing the powder up the nostrils; this is called *Dry Inoculation;* and by following one or other of these plans the inoculation will surely take effect. The inoculator must be acquainted with the above modes, and the families of the inoculated ought to have some general idea of them. At the time when fever comes on after inoculation a swelling appears on the neck of the child (in boys on the left side, in girls on the right); this is the variolous poison, collected together in one place, and is an evidence that the breaking out of the eruption will not be extensive; it is called the mother of the small-pox. This tumour must not be meddled with, but when the scales or crusts fall off, then it gradually disappears. There is a form of the disease which may be called the convulsive small-pox; when, during the stage of fever, the child is suddenly frightened in any manner, the hands of it become convulsed, the patient is unable to speak, and the eyes are turned upwards; this state lasts for a short time, and then passes off, but may return, and last for three or four hours; attacks of this kind may recur twice or thrice; they are of no consequence, and need not excite alarm, but will disappear of themselves without the use of medicine: it is right that all families should be made acquainted with this accident.

2nd. *Seasons.*—In regard to the season for inoculation, it is of great importance to choose a favourable time. The first, second, third, eighth, ninth, and tenth months are the best; when the weather is very hot or very cold it cannot be done; during the fourth, seventh, eleventh, and twelfth months, it may perhaps be done; but during the fifth and sixth months it never succeeds. Also, when the spring promises to be warm, and on the contrary is cold; when the autumn ought to be cold and is hot; when the winter ought to be cold and is mild; these seasons are irregular, and inoculation ought not to be attempted.

3rd. *Choice of lucky Days.*—Before performing inoculation

a lucky day ought to be chosen. The eleventh day of the moon ought to be avoided, for at that time a person's spirit (or spiritual essence) is in the pillar or septum of the nose; also the fifteenth day of the moon, because on that day the spirit is in the sides of the body.

4th. *Management of the Patient.*—During the process of inoculation, it is of great importance that strict rules of management be adopted in respect to heat and cold, attention to diet, and the avoidance of any cause of alarm or fright. As to the regulation of heat and cold, attention must be paid to the season, and the day and night clothes of the child must be increased or diminished according to the state of the child's body, always observing whether the palms of the child's hands be moderately warm; if they are cold, the child is not well. The body must not be kept too hot, or fever will ensue. Standing near a fire, or in a draught of cold air, or drinking cold water, and such like, are to be avoided; in fact, excess either of cold or heat must be guarded against, lest it should induce the severe confluent form of the disease.

In regard to diet, if the child be at the breast, it must have neither too much nor too little milk; the nurse must not eat shell fish or reptiles, bitter, heating, fried or cooling things. If the child is old enough to eat, it must not be fed with bitter, heating, hard, indigestible, or cooling things; and repletion must also be avoided, as this interferes with digestion, and may injure the progress of the eruption; at the same time hunger must be prevented, lest the vigour of the system fail, and the eruption decline. Articles of a heating quality, as shell fish or reptiles, must be avoided after inoculation. On the appearance of the fever a little food can be taken; when the spots appear, fasting must be enjoined for one or two days; at the time of maturation of the pustules, food may be taken; but when the maturation is complete, fasting must be observed as before. At the end of a month the usual diet can be adopted, with merely the following exceptions, viz., that fat, bitter, heating, fried, or hard and indigestible articles, are not to be made use of. As respects the pro-

hibition against articles of a heating nature, it is lest they should assist the poison, and induce the confluent form of the disease; the eating of much fat is forbidden, lest the blood should be obstructed in the vessels, and much phlegm produced, or the stomach disordered and severe disease induced; in other respects, if the food taken be pure and wholesome, it need not be diminished, as it tends to the support of the child. Inoculators say, after the spots have been visible for two or three days the child can eat onions, and soup. This is a good rule; but if the child be thin and weak, and no fever be present, it ought to have a full allowance of wholesome food. Care must constantly be taken lest the child should be frightened or alarmed, either when asleep or awake; and, although too much strictness in watching is unnecessary, remissness on this point might be productive of mischief. As for other general regulations, it is well that the child should be attended to, and its diet regulated for a month previous to inoculation; and, if this rule be adopted for the previous year and a half, so much the better. After inoculation care must be taken till the crusts fall off, and for a month after that period, and then all can go on as usual.

The superiority of this plan of inoculation over spontaneous small-pox consists in this, that it can be regulated according to the state of the family; especial care must always be paid to this particular, and it must not be carelessly omitted.

5th. *Examination of the Child.*—At the time for inoculation the child must be carefully examined whether this operation can be performed or not, and the inoculator must attend minutely to the state of the family; for there are foolhardy inoculators, who only seek for gain, and do not regard the trivial as well as important circumstances, and despise the dangers to which they expose the inoculated. The evil of this is very great; therefore, every person should carefully examine into this matter for himself.

Inoculators frequently meet with parents who wish to have their children inoculated at once; they are ignorant of the previous management required, and will not listen to the prohibi-

tions or believe the words of the physician, owing to their own over-indulgence and carelessness. In these circumstances it is best not to perform the inoculation at all.

If the general appearance of the child be good, its spirits lively, the viscera performing all their functions well, the pulse regular and not too quick, internally having neither fever, indigestion, nor other disturbance or excitability, and externally neither cold nor heat, or dryness of the skin, and the child having clear, distinct, red streaks behind the ear; giving evidence that the child is in good health, and may be inoculated. When there is also a clear, healthy, and rosy complexion; and no livid colour existing round the eyes, about the bridge of the nose, temples, or corners of the mouth; both eyes being bright and lively, and no eruption or sores about the body, then inoculation can be performed. If the child have not sufficient blood and animal spirits; if the stomach be weak, and the general energy of the system exhausted, the pulse being irregular and uneven; or if after weaning, or any disease, the spirits do not rally, and the streaks behind the ear are purple, rough, and puffing, and not distinct and clear, the child is unhealthy, and must not be inoculated. If the complexion be livid, dark, and sallow, with no liveliness of the countenance, the eyes being dull and without animation, the body weak and covered with an eruption, the child being easily alarmed and its bowels disordered, it cannot be inoculated. However, if the streaks behind the child's ears be purple, the lobe of the ear not warm, and the middle finger alone is cold, then it may be known that small-pox is about to appear spontaneously, and inoculation is useless. All children having arrived at the age of one year, the seasons and state of bodily health being favourable, should at once be inoculated. It is well not to wait longer, lest the external impression being applied the disease should arise spontaneously.

6th. *Restrictions.*—The room of the inoculated child ought to be clean, and airy, and well lighted, so as never to be dark, especially avoid bustle or commotion, attending to all the other

prohibitions, and thus every thing will go on well; but inattention will at once assail every thing. It is of especial moment to avoid all disturbance; the child must not be scolded or railed at, but rather amused by singing and music; the head must not be combed so as to break the pustules; the bed-clothes must not be frequently lifted, lest the child be exposed to the wind; and if there should be a strong wind, or much thunder and rain, let the child be kept quiet and calm. All unpleasant odours must be avoided, as the effluvia from a menstruating woman, from perspiration, from burned hair or fish-bones, and the smoke of an extinguished candle, or green wood, or onions, or from a drunken person.

No passers to and fro, or guests, are to be admitted; keep strict watch lest any old Bhuddist or Java priests, or persons dressed in mourning, enter the house.

Always burn incense to dispel noxious air. To make foul-air-dispelling incense, use southern tseany wood half a catty, rhubarb four ounces; cut these into thin slices, and constantly burn them in an open choffer, and thus all foul vapours will be removed.

7th. *Promise of Eruption.*—After the inoculation, and before the fever appears, there suddenly appears on the child's face several pustules like small-pox; this is called "sin meaou," promise, or belief eruption; it is the forerunner of the disease, and the evidence of the poison. If the "sin meaou" be red and soft, wait awhile and it will disappear; but if it be reddish purple, and hard, like fishes' eyes, immediately take a silver needle and break the pimples, and no evil will ensue, using at the same time the two sages' powder. To make this sage's or wise man's powder, take equal parts of bright yellow arsenic and purple herbs, pound them and mix them together, using also a little oil.

8th. *Repetition of the Inoculation.*—If, after waiting fourteen days, the fever does not appear, should the season still be favourable, the inoculation may be repeated. After the inocu-

lation, perhaps sufficient attention has not been paid, and the child may have taken the pellet from its nose, the essence of the poison dissipated, or the lymph lost its strength, and thus the fever does not come on; or the lymph may be old and weak, or the child may be strong and vigorous, and it is difficult to make it feel the influence of the poison; or the poison received from the mother's womb may be deeply hidden, and although the lymph be applied, it cannot induce the disease, and thus no fever follows the inoculation. In all these cases it is the rule to wait for fourteen days.

9th. *Mode of Action.*—The inoculation must affect the viscera, and then fever commences. The nose is the external orifice of the lungs: when the variolous lymph is placed in the nose, its influence is first communicated to the lungs, the lungs govern the hair and skin; the lungs transfer the poison to the heart; the heart governs the pulse and transfers the poison to the spleen; the spleen governs the flesh and transfers it to the liver; the liver governs the tendons and transfers it to the kidneys; the kidneys govern the bones. The poison of small-pox lies hid originally in the marrow of the bones; but when it receives the impression from the inoculation, it manifests itself, and breaks out externally in the following order:—The poison passes wholly from the marrow into the tendons, and the poison which was concealed in the kidney is dissipated; from the tendons it passes into the flesh, and the poison of the liver is dissipated; from the flesh it passes into the blood-vessels, and the poison of the spleen is dissipated; from the blood-vessels it passes into the skin and hair, and the poison of the heart is dissipated; from the skin it passes wholly into the pustules, and the poison of the lungs is dissipated. The influence of the variolous lymph must thus enter and traverse the whole of the viscera, the poison (derived from the mother's womb, and hitherto concealed within), must also traverse the viscera and make its exit; and this is the regular order of reception or communication, and transfer. The proper period for the fever

to come on after inoculation, is the seventh day; but it is sometimes delayed till the ninth, eleventh, or fourteenth day. This is an irregularity which often occurs, and arises from the transfer taking place slowly. The fever may also appear as early as on the fifth day; in this case the poison within is instantaneously affected by the influence of the inoculation, and responding to the external impression, at once declares itself. Thus we have shown that the disease arises from the influence of the lymph drawing it out, and proving its exciting cause. Furthermore, care must be taken to protect and preserve the inoculation.

10th. *Rules to be adopted regarding Inoculation.* — Inoculation is to be used when the child has no disease, and it causes the poison to appear externally. If the business be well conducted, there is no occasion for any rules; but should the management be neglected, or any other disease arise, then attention must be paid to the rules. If the inoculation for the small-pox and the disease arising spontaneously have any circumstances of accordance, the rules that apply to one are applicable also to the other. After the inoculation the business of the inoculator is at an end; but as, when the disease declares itself, the people may be alarmed and in doubt, it is well to call in some confidential physician to watch its progress; this matter ought not to be wholly entrusted to the skill of the mere inoculator. The spontaneous small-pox has its important seasons, and of these there are both good and bad; if the season be very damp, this is even dangerous and hurtful; but for inoculation, good lymph must be selected, a proper time chosen, and good management adopted, and thus, throughout the whole affair, there will be nothing but what is safe and right.

The retired scholar Lew-lan, respectfully assenting to the imperial decree, compiled the *above ten very important regulations* regarding inoculation, and placed them in the "golden mirror of medical practice;" in later times celebrated physi-

cians have discoursed upon them, and revised them closely and intelligently. Families which have children, ought to attend very early to this matter, and by no means to consider it as of slight consequence. However, in poor villages, and out-of-the-way places, where there are no inoculators, or where, in consequence of the child having any cutaneous eruptions, it is not convenient to inoculate, the following excellent and well-established prescription may be used to cause the eruption of the small-pox to be sparse. Take thirty grains of linseed, remove the husk, and select those that are full and good, one mace of clear transparent cinnabar, and five grains of good musk; first take the cinnabar and musk and rub them to a fine powder, then add the linseed, and grind the whole together into an ointment. At noon on the fifth day of the fifth month, rub the child with the ointment on the fontanelle, on the chest and back opposite the heart, the two palms, the soles of the feet, the bend of the elbows, and the loins, altogether thirteen places, on which the whole quantity must be used without diminution: it must be thoroughly rubbed on the surface, to the size of half a dollar. After the friction, do not wash the parts, wait till the ointment sinks in of itself. If the disease arise during the first year of using the friction, the pustules will be numerous; the second year, at the same time, the friction must be repeated, and the pustules will be fewer; and if it be used the third year, the disease will not appear at all. If the child has not passed its first year, it will be well to use the friction on the ninth day of the ninth moon, and on the first day of the seventh moon; for boys and girls the rule is the same. This family prescription for preventing small-pox has been handed down for thirty generations.

Another Prescription.—A month before the spring solstice take seven hens' eggs, put them into a linen bag, and suspend them by a thread in a jar of thin manure (of which there must be a large quantity); after one month take them out, and, without breaking them, bury them in the ground for three days,

avoiding places where people walk ; then on the morning of the spring day boil three of the eggs in an earthen pot; then let them be eaten fasting, lest eating beforehand should have spoiled the appetite; let the whole be taken in three days; if the child be very young, it will only be able to take one or two of them. After having used this plan for three years, that which would have been a malignant case will be a slight one, and that which would have been slight will not arise at all. The variolous poison, arising entirely from the father and mother; the action of the manure disperses the poison, and the placing in the ground supports the strength. This plan ought to be adopted after the spring day, and thus the poison will be weakened and the disease made slight. This is a certain doctrine on no account to be neglected or despised.

Another Prescription.—For all children, whether boys or girls, use good, solid, clear Chuen-leen seeds ; for ages of from 1 to 3 years, take seven of them, bruize them in a mortar, and add three bowls of water ; put the whole into a new pan and boil ; then pour the decoction into a jar, and, avoiding a windy place, dip a piece of new white cloth into the lotion, and wash the body with it from head to foot till all is expended ; then rub the surface dry, and avoid exposure to the wind for a while ; for 4 to 5 years old children, take nine of the seeds and five bowls of water ; for children of 6 to 7 years, use fifteen seeds and seven bows of water ; from 8 to 11 years, use twenty seeds and nine bowls of water ; from 11 to 15 years use thirty seeds and fifteen bowls of water ; while boiling the decoction or using it do not use any iron utensil. This will not only prevent small-pox, but also any other cutaneous eruption coming on ; if you do not believe this, let a hand or a foot not be washed over, and there the disease will arise ; it is, indeed, a divine remedy.

Woo-Chun-Shon, of Singan, while he was in office, had three children, who were seized with small-pox and all died. While he was praying and fasting with much devotion in the Ching Leving Meoou, or City Temple, he dreamed that one of the

gods communicated this prescription to him. He afterwards took a concubine, and by her he had two sons; to both he applied this remedy, and they grew up in health. In gratitude to the gods, he caused it to be published. Afterwards, also, Wao-e-Fung, of Tzoo, gratuitously published and spread it abroad throughout the country far and wide, during a visitation of the small-pox, and innumerable children were thus preserved. The regulation for washing is as follows:—Seven days must be chosen, and the application must be used seven times from the fifth to the eighth month; it is well that the seven chosen days be thus during the warm weather.

Another Prescription.—Take a silky melon, neither too old nor too young, just when it cannot be eaten, hang it under the eaves of the house to dry in the wind; only take of the fruit two or three inches near the tendril, and dry it thoroughly on a tile over the fire, so that its qualities may be retained; reduce it to a fine powder, and to every mace (about a dram) add of washed cinnabar three condoreens (about a scruple); let every dose be five condoreens (half a dram); and use black sandy sugar to mix it up with. If the child be but just born, one dose will be sufficient; if three years old, two doses; over three years, three or four doses must be given: and, as above, in cases where the disease would be malignant, it will be mild; and, where mild, it will not appear at all. This is an old prescription, and after numerous trials the disease proved in every case mild; and in one boy, who took much of it, the disease never appeared at all.

ART. IV.—*Notes on Urinary Diseases.* By JOHN ALDRIDGE, M.D., Lecturer on Chemistry to the School of Medicine, Park-street, Dublin.

1. Portal System of the Kidney.
2. Diagnosis from Lithic Acid Deposits.
3. Diagnosis from Alcaline Urine.
4. The Phosphatic Diathesis.
5. Urine in Typhous Fever.
6. Cerebral Symptoms from Urinary Diseases.
7. Air from the Urinary Passages.

PERHAPS the reader may find, in the following pages, some views of urinary diseases that are novel, and others that are valuable, as confirming results already promulgated. If such be the case, I am anxious to ascribe all the merit to my tried friend and ever zealous partner in this branch of medical research, Mr. O'Ferrall. To this gentleman I owe a vast number of specimens for analyses during the years 1838 and 1839; and subsequently, as his clinical clerk, at St. Vincent's Hospital, I enjoy very extensive opportunities, and the valued assistance of his experience in prosecuting the investigation of renal diseases.

From the materials in this manner accumulated, I shall hereafter continue the "Notes on Urinary Diseases," of which the contents of this paper may be considered as the first series.

ON THE PORTAL SYSTEM OF THE KIDNEY.

In a digest of the then existing state of knowledge of urinary diseases, published in the March Number of the Dublin Journal for 1839, I remarked the improbability of the opinion at that time generally entertained, that urine is secreted from arterial blood. I asked, why should the kidney differ from the other great emunctories in this particular? The liver and lungs secrete from venous blood; and is it not reasonable to think, that in every instance, the means of depuration should be applied to the *impure* fluid?

Why should the effete particles, which it is the function of the kidneys to separate, be permitted previously to traverse the circulation; to contaminate every new-growing tissue; to poison the "flowing flesh," the life-carrying stream? Additional obscurity was thrown on the subject by the discovery of Jacobson, that in fishes and reptiles the urine is secreted by venous blood. Was it likely that so great a difference could exist between the performance of this function in contiguous groups of vertebrated animals? These questions have been lately answered in a manner very different from my expectations; but, developing a mechanism, so little in accordance with what is known of other glands, that its study ought to excite physiologists to a critical scrutiny of the firmness of the foundations upon which many of their theories are based.

One of the most successful investigators of the minute anatomy of the kidney has been my friend, Mr. Bowman, whose observations are contained in a paper published in the Philosophical Transactions during the past year. This gentleman has ascertained that the kidney is furnished with a true *portal system;* and that urine (like the bile) is secreted, in part at least, from blood traversing, at the time, a second set of capillaries; I will, in as few words as possible, explain the results at which this acute observer has arrived, especially as they are calculated to elucidate many things which I have remarked in the study of renal disease.

According to Mr. Bowman, the exceedingly tortuous and convoluted urinary conduits terminate at their final extremities each by a contracted neck, which conducts into a little chamber or cyst. In this cyst is contained the true glandule of Malpighi, which consists of a tuft or coil of capillary blood-vessels, totally naked, which originates in one of the ultimate branches of the renal artery, and terminates in an efferent vessel. Several of these latter form, by their anastomosing ramifications, the plexus that surrounds each urinary conduit and tubule; the urinary conduits are lined by thick epithelium, and their necks are furnished with vibratile cilia.

"All the blood of the renal artery," says Mr. Bowman "(with the exception of a small quantity distributed to the capsule, surrounding fat, and the coats of the larger vessels), enters the capillary tufts of the Malpighian bodies; thence it passes into the capillary plexus surrounding the uriniferous tubes, and it finally leaves the organ through the branches of the renal vein.

"Thus there are in the kidney *two perfectly distinct systems of capillary vessels;* the 1st, that inserted into the dilated extremities of the uriniferous tubes, and in immediate connexion with the arteries" (the Malpighian bodies); "the 2nd, that enveloping the convolutions of the tubes, and communicating directly with the veins. The efferent vessels of the Malpighian bodies, that carry the blood between these two systems, may collectively be termed the *portal system of the kidney.*

"The former, which may be styled the Malpighian capillary system, is made up of as many parts as there are Malpighian bodies. These parts are entirely isolated from one another; and, as there is no inosculation between the arterial branches supplying them, the blood enters each in a direct stream from the main trunk. This capillary system is also highly remarkable—indeed stands alone among similar structures, in being bare. The secreting tubes of the kidney, like those of all other glands, are, strictly speaking, an involution of the outer tegument of the frame; their interior is, in one sense, the outside of the body; their walls intervene between the vessels and the exterior, and, as it were, cover them in. But here is a tuft of capillaries extruded through the wall of the tube, and lodged in a dilatation of its cavity, uncovered by any structure; bare, indeed, yet screened from injury in its remote cell with infinite care and skill! Each separate part also of this system has but one afferent and one efferent channel, and both of these are exceedingly small, compared with the united capacity of the capillary tuft. The artery, in dividing, dilates; then follow branches which often exceed it in size, and which gradually break up into the finest. The efferent vessel does not usually even equal the

afferent, and in size is often itself a capillary. Hence must arise a greater retardation of the blood in the tuft than occurs probably in any other part of the vascular system; a delay that must be increased by the tortuosity of the channels to be traversed.

"The other system of capillaries, or that surrounding the uriniferous tubes, corresponds in every important respect wtih that investing the secreting canals of other glands. It is well known to anatomists, and therefore does not require to be described at any length. Its vessels anastomose with the utmost freedom on every side, and lie on the deep surface of the membrane that furnishes the secretion.

"I have applied the term '*portal system of the kidney*' to the series of vessels connecting these two, on account of the close analogy it seems to bear to the vena porta. The precise quality of the blood it carries may be doubtful; but in distribution it is similar. It intervenes between two capillary networks; the first of which answers to that in which the vena porta originates, and the second to that in which the vena porta terminates. The obvious difference lies in its several parts not uniting into a single trunk, to subdivide afterwards; but this circumstance seems to admit of an easy explanation. A trunk is formed in the great portal circulation, for the convenience of transport, most of the capillaries which supply it lying at a distance from the liver. Now, in the kidney the vessels issuing from the Malpighian tufts are disseminated pretty equally throughout the plexus surrounding the tubes (the one into which they have to discharge themselves); and they, therefore, enter it at all points at once, without uniting. In the medullary cones, however, where there is a capillary plexus to be supplied with blood, but no Malpighian bodies nearer than the base of the cones, the conditions which oblige the formation of a portal venous trunk begin to operate; the two capillary systems it serves to connect are at some distance apart. Here, consequently, the Malpighian bodies are generally larger, their efferent vessels more capacious, and

branched after the manner of an artery. *Each one of these efferent vessels is truly a portal vein in miniature.*"

Mr. Bowman has particularly examined the kidneys of those animals whom Jacobson and Nicolai have asserted to be furnished with portal veins, passing from the hinder parts of their bodies to these organs. He finds the kidney of the boa to be composed of isolated lobes; that each of these lobes is supplied with emulgent arteries and veins, ducts, and branches of the portal vein in question; that the branches of the ducts and portal vein are at first distributed on the surface of the lobes, while the renal arteries and veins penetrate the lobes, and ramify in a central plane: that the urinary conduits pass from the ducts on the surface towards the central plane, and then turn outwards, without anastomosing, to terminate at a short distance in the cysts which contain the Malpighian bodies; that these bodies are supplied by the branches of the renal artery in the usual way; and that their efferent vessels unite with centripetal ramifications of the portal veins, to form the *capillary plexus* destined to surround their ducts; and, lastly, that the blood of this *plexus* is conveyed away by the radicles of the emulgent vein.

Mr. Bowman has been led to speculate on the uses of these two sets of capillaries, that he has thus proved to exist in the kidneys of all animals; and he brings forward much ingenious argument to show that the use of the Malpighian bodies is to secrete the watery portion of the urine. The analogy between the urinary conduits and the secreting part of other glands leaves very little doubt of these organs being the essential secerning apparatus. But the naked capillary coil that constitutes a Malpighian body, placed in a cavity closed on every side except where it communicates with the conduits, composed of vessels much greater in their aggregate capacity than the afferent or efferent vessels, presents an apparatus admirably adapted for excessive perspiratory action. And when, in addition, we find cilia arranged to facilitate the current of a fluid, we can

scarcely deny that Mr. Bowman's hypothesis is a very feasible one.

This hypothesis well explains the deficiency in the aqueous part of the urine of reptiles; for we find that, in the same way as only a portion of their blood passes through their lungs, so is it that only a portion of the blood circulating in the intertubular plexus, has passed through the Malpighian bodies. But principally is this theory interesting, as it explains the independence, as to quantity, of the solid and watery constituents of the urine; an independence which has much to do with the explanation of disease.

It is only necessary, in addition, to remark, that the spots visible in the centre of the polygonal spaces on the surface of the kidney, with a lens, in health, and frequently with the naked eye in hyperæmia or incipient granular degeneration, and which spots have been mistaken by Rayer for the glandules of Malpighi, are nothing else than radicles of the emulgent vein; the Malpighian bodies being rarely, if ever, at the surface.

DIAGNOSIS FROM LITHIC ACID DEPOSITS.

Every one knows that the lithic acid deposits assume two principal forms, namely, the amosphous or powdery, and the crystalline. These can only be distinguished in many instances by the microscope; and yet, as I shall endeavour to show in this note, their distinction is of great importance.

Few appearances connected with the urine attract more attention, or create more alarm among the inexperienced, than the occurrence of a copious deposition of lithates; but the very various circumstances which accompany it, may suggest to the practical physician, that this is a phenomenon of very minor importance. We see deposits of the urates in inflammatory affections, rheumatism, dropsies, &c., but we also see them where little or no disturbance of the system exists. I believe the fact to be, that these deposits in general correspond to a very concentrated urine, in which there is not only an excess of urates,

but likewise of urea and lactic acid; this excess depending, not upon an increase of solid excretion, but most usually on a deficiency of water. It is easy to comprehend that sixteen grains of super-lithate of ammonia may be well soluble in two pints of cold water, whilst, if the quantity of liquid be reduced to one pint, a considerable portion may be deposited. Super-lithate of ammonia (which, I believe, forms the bulk of these precipitates) is much more soluble in hot than in cold water; and thus, when a concentrated hot solution is permitted to cool, the excess becomes deposited. If transparent urine of a specific gravity 1·018 be evaporated gently to 1·028, and then permitted to cool, a cloud of lithates will deposit; and it is plain that the effect would be precisely the same, if, instead of removing some of the water, that portion had never been added. Urine evaporated in the manner described, would have not only the lithates, but the urea, lactic acid, and other constituents, also proportionately increased. Now this is precisely the character of the urine, from which a sediment of lithates ordinarily subsides.

Let us for a moment contemplate the circumstances in which these precipitates are observed. We frequently find them in inflammations of different organs; in pneumonia, pleurisy, peritonitis, &c.; we perceive them accompanying chronic dyspepsia, and other cases where we have reason to think there is a sub-acute inflammation of some part of the intestinal canal; we see them in fevers both continued and intermitting; in rheumatism and gout; after a debauch in wine, &c.; in all these cases theory would lead us to suppose the existence of an irritation in the kidneys. Again we find lithic acid deposits in dropsies depending on diseases of the heart and liver; in excessive secretions from any surface, whether profuse perspiration or diarrhœa; thus I have known persons whose urine threw down lithates as long as they were confined to bed, which disappeared when they were able to get up and walk about; and many persons perceive a deposit in their water during summer, but not in winter: now in all those cases of flux or dropsy, there exists

a derivation from the kidneys. May we not conclude, that lithates are deposited from the urine, when the quantity of water secreted by the kidneys becomes diminished, either by an irritation, or by a counter-derivation, in obedience to well-ascertained physiological laws.

This hypothesis supposes that the water and solid elements of the urine are independent secretions. Much light is thrown on this point by the discoveries of Mr. Bowman already alluded to in the note on the portal system of the kidney. If we agree with him that the water is secreted by the Malpighian bodies, and the other constituents by the urinary conduits, we can have no difficulty in understanding that the relative quantities of these substances may vary, independently of each other.

That irritation, previously to the supervention of hyperæmia, tends to diminish secretion, is generally admitted. Why, in secondary irritation of the kidneys, the Malpighian capillaries should secrete less, while the excretion from the capillaries of the intertubular plexus should remain unchanged, I do not comprehend; some persons will be satisfied by ascribing this difference to the operations of vitality.

The quantity of urine becomes diminished frequently in acute nephritis and granular degeneration without any lithic deposit. The cause of this will be considered in the notes on cerebral symptoms from urinary diseases and albuminous urine.

Although a deposit of amorphous lithates is of little importance in the diagnosis of disease, the opposite variety of urine (namely, that which is passed in ordinary quantity, is pale and transparent) may frequently be made available. Thus, Mr. O'Ferrall lately requested me to examine the chest of a patient in hospital, whose hectic countenance, hurried breathing, and contracted thorax, led me at the instant to suspect phthisis; upon applying the stethoscope I heard every where the most distinct, acute, and grave bronchial rales; and percussion being natural, I made the inconsiderate diagnosis that she was labouring under acute catarrh. Mr. O'Ferrall immediately directed my attention to her urine, lying in a glass adjacent. This was

very pale and transparent, an evidence that she could not be at the time affected with any acute inflammation; and having waited, at his desire, a few minutes, we again examined her, when all the sibulous and sonorous rales were found to have disappeared. This patient, whom the reader may by this time have perceived to be hysterical, had previously deceived many practitioners by pseudo-cardiac phenomena. And the case is interesting, both as it shows, that bronchitis may be simulated by the same cause; and that a urine of the character described, may often serve to distinguish between such a disease and true inflammation.

Crystallized Lithic Acid.

A cloud of crystals of lithic acid, mixed frequently with blood globules, in an albuminous and very acid urine, is considered by M. Rayer as diagnostic of gouty nephritis. I frequently have had opportunities of proving the correctness of this opinion.

DIAGNOSIS FROM THE ALCALINITY OF THE URINE.

The chemical change whereby the urine becomes alcaline, is easy to comprehend. Urea is a compound of the radical of carbonic acid (carbonic oxide) with the radical of ammonia (amidogene $= N.H_2$); when urea ferments, water becomes decomposed, and its elements uniting with the carbonic oxide and amidogene respectively, carbonate of ammonia is generated. Part of the ammonia formed neutralizes the lactic acid, to which urine usually owes its acidity; another portion unites with the biphosphate of magnesia, forming *ammoniacal magnesian phosphate*, and if the fermentation proceeds to any considerable extent, free carbonate of ammonia, producing effervescence upon the addition of acids, exists in the liquid. I merely introduce these notorious facts, to elucidate the subsequent part of this note.

Pure urea dissolved in pure water is little liable to change; just as a mixture of pure alchohol and water may be kept for an indefinite time without alteration. But when mixed with a ferment (that is a substance, itself in the state of chemical altera-

tion), the tendency to decomposition becomes communicated, and the urea in the one case, and the alcohol in the other, become converted into new principles. The ferment that causes urine kept at a warm temperature to putrefy, is usually the extractive matter of the urine; but pus and mucus act much more rapidly as ferments.

Before we can draw any diagnostic conclusions from the acidity or alcalinity of the urine, as to the condition of the urinary organs, it will be, of course, necessary to ascertain whether the patient has been lately taking alcalies, earths, or their carbonates, or the salts of these bases with the vegetable acids.—I have known even cream of tartar to render the urine alcaline. Likewise whether the patient is salivated at the time by mercury, as this, according to my experience, is a common cause of alcalinity.

Moreover, it is not necessary that the urine should turn turmeric or rhubarb paper brown, to entitle it to be pronounced *alcaline;* if it does not redden litmus, or even if it but very faintly redden it, that is in general sufficient evidence of the urea having been in part decomposed.

Supposing it proved that the alcalinity of the urine, in a given case, does not proceed from alcaline medicines or salivation, let us inquire, what are the causes which may produce this condition? The most obvious is, retention in the bladder, and consequent putrefaction. To elucidate the manner in which this cause operates, I may be permitted to describe a case belonging to a class frequently met with:—A carrier, thirty years of age, was engaged in driving his cart, when his horse took fright; the poor fellow, in endeavouring to restrain the flight of the alarmed animal, was thrown, and the wheel passed across his loins; he was shortly afterwards conveyed by the policeman on duty, to St. Vincent's Hospital; upon examination it was found that he had paraplegia of the lower extremities, and paralysis of the bladder; his water was drawn off twice daily, when after five or six days the urine was perceived to be turbid from mucopus; in three or four days more it again became transparent;

but at the termination of its emission, a glairy substance followed, which immediately subsided to the bottom of the vessel; the urine was now alcaline. Here, it is reasonable to suppose, the retained urine acting on the coats of the bladder produced an alteration in its secretion, and the mucopus mixing with the urine acted as a ferment. If this hypothesis be received, the urine must have been secreted acid, and only have become alcaline in the bladder; and accordingly we found, that when a short time after having emptied the bladder as much as possible, we again drew off some urine, it was in this case acid in its reaction. The glairy substance has been shown by M. Rayer to depend on a reaction between the alcaline urine and the mucus or pus.

I do not believe that the urine ever becomes alcaline from putrefaction in the bladder, except when it is mixed with pus or mucus; the globules of blood, if they act at all, operate very feebly as a ferment. But there are cases where the urine appears to be *secreted*, either faintly acid, or neutral, or even alcaline, and this is due, according to M. Rayer, to an inflammation, either acute or chronic, of the cortical and tubular substances of the kidneys. Now, as the determination of the truth of this proposition is of the greatest importance, both as regards diagnosis and treatment, we have taken every opportunity at St. Vincent's Hospital, of testing its accuracy.

Among numerous instances I may allude to the following: A case of essential hæmaturia, under the care of Mr. O'Ferrall, in the course of which repeated attacks of nephritis occurred; these were diagnosed from the supervention of shivering, pains, and deep-seated tenderness in the region of the kidneys, tendency to vomiting, &c.; in each attack the urine became neutral, and cupping the loins as regularly restored its acidity, at the same time that the other symptoms were removed. Cases of obstinate stricture, in which the same phenomena frequently occurred: A woman who laboured under spinal disease accompanied by catarrh of the bladder, and alcalinity of the urine, was treated by cupping, followed by setons over each kidney;

the urine ceased to be alcaline long before the purulent discharge was diminished. In this case it deserves to be noted, that when the urine regained its acidity, she could retain it much longer than before. Another woman whose urine was very alcaline and deposited a mortar-like sediment, was examined after death; the bladder was the seat of numerous fungoid growths; but the kidneys were atrophied, firm, very adherent to their tunics, very pale in some parts, in others with greenish-brown depressions, at which situations the cortical substance was absorbed, the bases of the tubular fasciculi being in contact with the fibrous tunic: these are the appearances described by M. Rayer as occurring in subacute nephritis. In fine, the weight of evidence which has presented itself to us at St. Vincent's Hospital, has fully borne out the truth of the proposition advanced by the eminent pathologist I have mentioned.

Why inflammation should cause a secretion to change its chemical nature, is a question that it is impossible to answer in the present state of science. But in addition to the many facts that have been brought forward by Matteuchi, Dumas, and others in proof of this phenomenon, I may mention that I have found the fluid contained in the vesicles of herpes, and the bullæ of pemphigus invariably alcaline.

THE PHOSPHATIC DIATHESIS.

Dr. Prout gives an excellent description of what he calls the phosphatic diathesis. The miserable patients labouring under this disease are usually in a state of extreme cachexia; have suffered long from urinary disease, either obstinate stricture, or enlarged prostate, or calculus, &c.; have pain and tenderness in the loins; feebleness, sometimes approaching to paralysis, of the lower extremities; their urine is pale, somewhat turbid, but becoming clear by the addition of a little nitric acid, of a low specific gravity, having no effect on blue or reddened litmus, or perhaps feebly restoring the colour of the latter; if examined by the microscope, the turbidity is seen to be due to an amorphous powder; frequently there is also a light, sandy deposit, which in the

field of the microscope presents the regular and beautiful crystals of ammoniacal magnesian phosphate. Now, this is what is called phosphatic urine; it is so called because it is troubled by insoluble phosphates, and throws down a precipitate of these salts, which are easily recognized by their solubility in dilute nitric acid, and insolubility in water of ammonia.

The symptoms that accompany what is called the phosphatic diathesis, have been well described; the true nature of the disease, and consequently its proper treatment, have been lamentably mistaken. It has been considered as a result of cachexia; its essence to consist in a super-secretion of the urinary phosphates; and its treatment in the regulation of diet, the exhibition of opium, and the encouragement of *hope*, a hope too seldom realized. Dr. Willis says, "With due attention to every circumstance, by far the most valuable medicine we possess, in that state of the system which is accompanied with the too copious elaboration and deposition of the phosphates, is opium."* This extract sufficiently exemplifies the usual opinions with respect to the cause and nature of the disease. Yet, I am prepared to show, that in place of there being an increased secretion of the phosphates in this disease, the quantity of these salts in the urine is for the most part diminished. I have constructed the following table from my notes, for the purpose of elucidating this point. It is evident that the proportion of phosphates must be regulated by that of the phosphoric acid. I have, therefore, estimated the quantity of phosphoric acid by the following process: by precipitating the sulphuric and phosphoric acids from four ounces of each specimen of urine by nitrate of barytes, collecting the precipitated phosphate and sulphate, and separating the phosphate by diluted nitric acid, and then neutralizing and throwing down the phosphoric acid by acetate of lead. I am aware there are objections to this process, but it is calculated to afford results, at least closely approximative:—

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* Urinary Diseases and their Treatment, p. 100.

Table.

Disease.	Appearance.	Sediment.	Specific Gravity.	Reaction.	Uric Acid thrown down by Hydrochloric Acid.	Urea.	Phosphoric Acid.	Remarks.
Dyspepsia.	Lemon yellow.	. . .	1.016	Acid.	Numerous crystals.	. . .	4.848 grs.	Not coagulable.
Pleurisy.	Deep amber.	Lithates.	1.026	Acid.	Ditto in long prisms.	. . .	3.878 grs.	Ditto.
Diabetes	Pale.	Epithelium.	1.042	Acid.	Numerous and large prisms.	Evaporated to a syrup, readily crystalized with nitric acid.	3.1512 grs.	Very sweet taste, makes 10 pints per diem.
Gonnorrhea chronic.	Pale yellow.	Loaded with mucous globules.	1.015	Acid.	Very large rhombic plates.	Evaporated to ¼ crystallized freely.	4.6056 grs.	Not coagulable.
Cirrhosis of liver (suspected).	Pale yellow.	Epithelium.	1.015	Acid.	Crystals, some club shaped (*vide* Jaundice), others in stars.	Ditto.	3.5 grs.	Ditto.
Phosphatic diathesis.	Pale.	Troubled, but cleared by nitric acid.	1.013	Neutral.	A cloud of rhomboid prisms.	Evaporated to a syrup crystallized freely.	2.2 grs.	
Purpura in numerous spots on legs, in convalescence, after acute rheumatism and pericarditis.	Light amber.	Cloud of epithelium, no blood globules.	1.016	Acid.	Rhomboidal plates.	At ¼ crystallized suddenly with nitric acid.	3 grs.	Ditto.
Gout in the knee.	Pale yellow.	A copious crystalline sediment of lithic acid in rhombic plates.	1.014	Very acid.	. . .	. . .	3 grs.	Ditto.
Acute rheumatism.	Pale yellow.	Copious pale lithates.	1.026	Acid.	. . .	. . .	3 grs.	Ditto.
Phosphatic diathesis.	Pale yellow.	Troubled, but cleared by nitric acid.	1.016	Faintly acid.	Copious rhombic colorless prisms.	. . .	2 grs.	Ditto.
Acute nephritis.	Brownish.	Turb'd, loaded with blood globules, and an amorphous powder.	1.023	Neutral.	Copious light brown crystals with acetic acid.	. . .	2.5 grs.	Slightly coagulable.
Diabetes.	Pale greenish straw.	Epithelium.	1.030	Nearly neutral.	. . .	Contained but little urea.	4 grs.	Sweet taste from 20 to 28 pints per diem.
Health.	Lemon yellow.	Epithelium.	1.016	Acid.	. . .	. . .	3.878 grs.	Not coagulable.

The materials for the foregoing table were collected in the year 1839, since which period I have found nothing to invalidate the results to which it leads. We find by it that, in place of being increased the quantity of phosphates in the urine is actually, generally, diminished in the so called phosphatic diathesis. The essential character of this kind of urine is not, an excess of phosphates, but a neutral or feebly acid condition; and the cause of its tendency to alcalinity depends upon an existing subacute nephritis, (*vide* the note on alcaline uriue).

A young man has stricture, or an old man has enlarged prostate or calculus, and constant retention, or friction, produces inflammation of the urinary passages; and this inflammation spreads along the ureters to the kidneys, to their cortical and tubular substances; and in consequence of this inflammation of the secreting substance, the urine becomes alcaline. Well, this spread of inflammation may be accompanied with fever, and frequent rigors, tendency to vomiting, &c.; and the case is called one of urinary fever; or, it may go on slowly, the fever of a hectic character, some deep-seated tenderness in one or both renal regions; weakness approaching to paralysis of the inferior extremities, much emaciation, and low spirits; and the patient is said to labour under the phosphatic diathesis. However, in both cases, the real disease is a *nephritis*—in the first, acute—in the second, subacute. In the former, the urine besides being neutral or alcaline, and depositing phosphates, is high-coloured, containing blood, and often very scanty. In the latter, this secretion is pale, and is frequently more abundant than natural. But in both, the alcalinity is the essential character of the urine, and not, the circumstance of its containing phosphates in suspension.

It is absurd, therefore, to talk of this as phosphatic urine, and of the disease which it signifies as a phosphatic diathesis.—The disease, so called, is none other than subacute nephritis, and the urine which accompanies it is characterized not by an

increased secretion of phosphates, but by an essential alcalinity, or at least neutrality, of this liquid.

I do not mean to deny, however, that there may be sometimes an increased quantity of the phosphates, occasionally present in disease: on the contrary, I have observed such to be the case, under certain circumstances. First, in old diseases of the bladder, such as ancient catarrh, fungoid growths, &c., there is frequently observed a deposit like mortar, consisting commonly of glairy mucus, and phosphate of lime, in enormous quantity. Now, when we recollect that phosphate of lime is contained in the urine, normally, in very small quantity, that it is notorious that calculi, composed of this substance, frequently form in the substance of the prostate, and that it is in the cloacum of birds (an organ analogous to the urinary bladder), that the egg acquires its shell, it is not, I conceive, too bold an hypothesis to imagine, that in these cases, the phosphate of lime is secreted by the lining membrane of the bladder.

Secondly. I have seen some cases where crystals of the neutral ammoniacal magnesian phosphate were deposited in considerable abundance from an acid urine. The most remarkable example of this kind occurred in a boy, seven years of age, at Saint Vincent's Hospital, who had rickets, and whose thigh was broken by a slight accident; the quantity of phosphoric acid contained in four ounces of his urine, was 8.76 grains: the fracture took long to reunite.

DIAGNOSTIC CHARACTERS OF URINE IN TYPHOUS FEVER.

The varieties of urine, met with in typhous fever, are generally three in number.

1st. A pale transparent urine, of medium specific gravity, and possessing the ordinary properties of healthy urine.

2nd. A very deep-coloured transparent urine, of high density, passed in small quantity, and neutral in its reaction.

3rd. A deep-coloured scanty urine, transparent while warm,

but depositing copious lithates according as it cools, and acid in its reaction.

Of the foregoing, the first variety is rare, and is frequently considered, by practical physicians, a ground of unfavourable prognosis, inasmuch as it displays a want of balance in the febrile movement, for the same reason as a clean tongue in typhus is regarded by some as a bad sign.

Most practical men consider the second variety as still more unfavourable, especially if it persist throughout the course of the fever. If, however, after a certain number of days, a cloud of lithates should present itself, or a lateritious sediment, as it is called, should fall down in the urine of a patient previously passing the second variety, this is considered a kind of fortunate crisis, and the patient's recovery is expected with greater or less confidence. In addition to this sign, some physicians regard the presence of albumen as an evidence of a favourable turn having taken place in the disease.

Now let us contemplate the true nature of this high-coloured transparent urine. It is deeply coloured, because it is concentrated; being passed in small quantity, it contains comparatively little water, and therefore the colouring matter is not much diluted. It is transparent, because it is alcaline or neutral. The deposit, in the third variety I have described, consists of *super*-lithates. If aqua ammoniæ be added to this third variety, the sediment will redissolve, because the super-lithates, in that case, will be converted into neutral salts, which are soluble. Now the second variety being alcaline or neutral, the lithates are held in solution by the additional quantity of alcali present.

That ingenious and observing physician, Dr. Corrigan, will remember his shewing me a specimen of transparent urine, of a very high colour, which he had remarked as a bad sign in fever, and the circumstance of my assuring him that it contained as much of the lithates as those specimens in other parts of the wards of the Whitworth Hospital, which were loaded with copious sediments, I demonstrated to him that such was the fact,

by the addition of a few drops of nitric acid. Mr. O'Ferrall, on another occasion, drew my attention to a very pale transparent urine. I was at the time anxiously seeking for the presence of caseine in this secretion, and I accordingly added some acetic acid to a portion,—an acid which coagulates caseine, but not albumen; a copious white curdy precipitate was throwu down, and we were certain that we had detected caseine in this urine: it proved, however, to have been the super-urate of ammonia.

This transparent kind of urine contains as much of the lithates as that which deposits a copious sediment. How futile, therefore, the hypothesis that an increased secretion of lithates is critical!

This variety of urine is transparent, because it is neutral or alcaline. Now, an increased quantity of alcali may be present in the urine of typhus, from either of two causes; from the patient having taken some alcaline medicine, or from his labouring under a nephritic complication (see note on alcaline urine.)

Carbonates and citrates of the alcalies are amongst some of the most common palliatives employed in the treatment of fever. No data, for diagnosis or prognosis, can of course be drawn from urine, rendered transparent by the use of these medicines.

But the urine may be neutral or alcaline independent of this cause. I have already shewn in the note on alcalinity of the urine, that this character, when depending on a vice of secretion, is an evidence of the existence of a nephritis, acute or chronic. Every practitioner is aware, how very latent a disease nephritis frequently is. Even in its acute form, the pain and tenderness often bear but little relation to the intensity of the inflammation; and the symptoms are still more obscure when the disease is chronic. When unaccompanied by inflammation of the pelvis and ureter, when in fact the disease is confined to the cortical and tubular substances, there seldom or never are those symptoms so often described, of pains along the ureter, retraction of the testicle, and pains in the corresponding thigh. If under ordinary circumstances, nephritis be obscure, how much more dif-

ficult is it to detect, when it constitutes one of the complications of typhous fever! a disease which renders all inflammations more or less latent. And yet, why should the kidneys be excepted, when the intestines, heart, lungs, and brain, are the seats of such frequent complications? How fortunate if we should have, in the alcalinity of the urine, a means of detecting the existence of this complication.

That eminent physician, Dr. Graves, detected carbonate of ammonia in the urine of a patient in typhous fever, which salt disappeared after crisis.

M. Louis gives one, and M. Rayer six cases of nephritis, complicating typhoid fever. The last of these presents the most remarkable similarity to our typhus. In geueral, in these cases, there was the most marked prostration, dorsal decubitus, teeth and tongue covered with a sooty exudation, copious eruption; these patients had a constant tendency to stupor and muttering delirium, without much heat of head, contracted pupils, tendency to epistaxis; the urine was scanty, frequently suppressed, bloody, or albuminous, and alcaline; they all terminated fatally.

I have seen cases such as these; but I prefer alluding to one alone, on account of the support it derives from the testimony of the distinguished physician who attended it with me. Doctor Stokes will remember the history of the fever which deprived us of our mutual friend, Surgeon Swift of Kingstown. This gentleman had been attending some very bad cases of typhus; at the time less healthy than usual, he was seized with the disease; thrown prostrate from the commencement, he was attacked on the first or second day with epistaxis, after which, there was no reaction; his head swollen, his mouth fuliginous, stupor, contracted pupils, and low delirium, marked the progress of the disease. The urine high-coloured, clear, and scanty, was to himself a source of uneasiness. On the eighth day it was alcaline; on the ninth, the introduction of the catheter only brought away a few drops of blood.

In a case such as this, the appearance of the lithates is a

sign of the urine ceasing to be alcaline. A favourable prognosis may be drawn from it, not because a lateritious sediment is critical, but because it demonstrates the resolution of a dangerous complication.

I have already alluded to the opinion of some physicians, that the presence of albumen is a favourable sign in typhus; now, I have reason to believe that it was not albumen, but phosphates, which these gentlemen detected. I think it was Mr. Rees, who first ascertained that phosphates are thrown down from a concentrated urine by ebullition; and I have more than once known this precipitate to be mistaken for albumen. The distinction between these two substances is easily observed, by attending to the temperature at which the precipitation takes place; and the effect of nitric acid. The phosphates are only thrown down at a *boiling* temperature, and are instantly redissolved by nitric acid. We have already seen that the urine being albuminous as well as alcaline, is a very bad sign in typhus, shewing, it is probable, an extension of the pathological condition (whether an inflammation or softening, it is difficult to say) to the urinary passages. Mr. O'Ferrall tells me that he has had frequent opportunities of proving the truth of this observation, even before he was aware that it was not original with him.

CEREBRAL SYMPTOMS PRODUCED BY RENAL DISEASES.

Every one knows that when the kidneys are removed, or their vessels tied, that urea can soon afterwards be detected in the blood, and that, at the same time, a peculiar train of cerebral symptoms arise. It is a strange thing that when urea is injected into the veins, no such effect should follow, as the experiments of Majendie have shewn; still the poisonous consequences of the accumulation of the elements of the urine in the blood are too well ascertained to be the subject of doubt. Thus when from any cause, the secretion of urine becomes suddenly and permanently arrested, delirium, drowsiness, and coma, with-

out being necessarily accompanied by fever, heat of head, throbbing of the carotids, nor increased vascularity of the brain, invariably supervene.

Much has been lately written on this subject, and some excellent principles of diagnosis laid down ; there are a few points connected with a subject, however, to which I wish to draw attention.

The cases of disease in which the elements of the urine accumulate in the system, appear to depend either upon an obstruction in the kidney itself, or some of its ducts, or a derivation towards some other surface, from whence excessive secretion takes place. I am inclined to ascribe the retention of the elements of the urine in the blood in cases of calculus, clots of fibrine, or worms, impacted in some part of the passages, of mottled kidney, and of acute nephritis, to the first cause ; and the suppression that occurs in cholera to the second.

There can be little difficulty in acknowledging that when a calculus becomes impacted in the pelvis or ureter, that the suppression which may follow is due to the obstruction which prevents the escape of the urine : and in mottled kidney, the diminution in the solid constituents, and subsequently in the quantity of water, appears at present to be tacitly ascribed to the obstruction offered by the granular deposition that characterizes it. It is not so clear, however, in what manner the suppression of urine occurs in cases of acute nephritis.

I have long felt a difficulty in understanding why the urine should become diminished, frequently suppressed, in cases of acute nephritis. Irritation, it is acknowledged, diminishes secretion ; but it does not appear that in other organs, that hyperæmia has this effect. In acute catarrh, there is first a dry stage, that of irritation ; but very soon after the sonorous and sibilous rales have announced a swollen condition of the lining membrane, we find mucous rattle and expectoration, demonstrating that secretion has supervened. In pneumonia, the stage of puerile respiration is rapidly supplanted by that of crepitating rale.

In pleurisy, symptoms have scarcely attracted us to the part, before frottement, or a dulness shifting according to position, shews that a secretion of some kind has commenced. It is an anomaly, therefore, in the history of inflammation, the diminished secretion of urine which so constantly accompanies acute nephritis.

But there is a want of proportion between the solid and fluid elements of the urine in this disease. At first, it is only the watery portion which becomes diminished; the urine is therefore highly concentrated, and it is not until the quantity of water becomes so small as to be incapable any longer of holding the essential elements in solution, that the latter accumulate in the blood, producing their poisonous effects upon the brain.

Mr. Bowman has rendered it extremely probable, that the watery and solid constituents of the urine are secreted by different sets of capillaries; the former by the Malpighian bodies; the latter by the intertubular plexus. Moreover, he has demonstrated anatomically that the channel between the cyst, wherein each Malpighian body is contained, and the corresponding urinary conduit, consists in a narrow neck furnished with vibratile cilia. Is it not probable, that when the kidney becomes engorged, that this narrow neck is encroached on by the surrounding swollen parts, its passage diminished, and at length completely obstructed, in proportion to the amount of congestion? If this supposition be admitted, it is easy to understand why the watery portion of the urine should become diminished, and at length totally suppressed; whilst the solid excretion remaining the same, or perhaps being increased in the urinary conduit, should in default of a menstruum to dissolve and remove it, become absorbed and thrown into the circulation.

In hepatitis proceeding from an acute gastro-duodenite, the ductus choledochus is supposed to be obstructed by the swelling of its lining membrane; the bile having no means of escaping through its usual channel, produces jaundice. Why may not something similar occur in nephritis?

At a future period, I may have an opportunity of describing some curious phenomena connected with Bright's disease. At present, however, there is one connected with the subject of cerebral symptoms, that I wish to consider. In cases of granular degeneration, when the specific gravity of the urine is low, and this fluid is passed in a less quantity than natural, delirium alternating with stupor occurs, as a consequence of the accumulation of the essential elements of the urine in the blood. But it is not only in such cases that you have these symptoms presenting themselves in Bright's disease; occasionally, muttering delirium, and drowsiness, are observed where the quantity of urine is so considerable as to prevent the supposition, that the accumulation can be dependant on a want of excretion. How are we to account for the cerebral symptoms under such circumstances?

The following is a case of ordinary occurrence :—A gentleman was attended by Mr. O'Ferrall and myself, who laboured under dropsy proceeding from diseased heart, complicated with Bright's kidney. On two distinct occasions the dropsical effusion was absorbed, and at each time he got symptoms of poisoning by urine, which in the latter terminated in coma and death.

It is an observation made by many writers on dropsy, that symptoms of what is called serous apoplexy, are apt to arise upon the absorption of the effusion from the cellular and serous cavities. M. Andral is inclined to attribute these to a metastatic effusion into the cerebral ventricles. I have never observed, however, these symptoms to show themselves in dropsies from cardiac obstruction; cases in which the disappearance of the effusions takes place most frequently. What is the peculiarity of the dropsy that accompanies mottled kidney, that gives rise to these remarkable symptoms?

Marchand and others have ascertained that urea exists in the dropsical effusions of Bright's disease. May not this fact afford us a clue to such cases as I have described? The dropsy

becoming absorbed, the urea previously in the cavities is now thrown into the circulation, and poisons the brain.

Not only is accumulation of the elements of the urine in the blood produced by obstruction in the kidney or its ducts, but likewise by a derivation from the kidneys by excessive secretion elsewhere. A remarkable example of the operation of the latter cause occurs in spasmodic cholera. The copious rice-water discharges in this disease check most of the other secretions, and amongst the rest that of urine; urea consequently collects in the blood, and cerebral symptoms are produced. In consequence of a conversation on this subject, which I at one time held with Dr. Hudson, of Navan (a gentleman whose opportunities of studying cholera, under the late Dr. Mac Intosh, of Edinburgh, were most extensive), I was anxious to obtain from him his recollections of the disease, as connected with the suppression of urine. The following letter from him, in reply to one from me, is very interesting.

"*Navan, January 25th.*

"My dear Aldridge,—I cannot charge my memory with more than the general features of the cholera cases about which I spoke to you, but I doubt not that you will find full particulars in the third edition of Dr. Mac Intosh's Practice of Physic. He had abundant materials, for accurate notes were taken at the bed side, and at the *post mortem* examinations in every instance by myself, or some other assistant.

The general rule in cases which survived the collapse was, that the suppression of urine continued, and as the secondary fever advanced, the face became suffused, and of a dusky red colour, the muscles tremulous to a remarkable degree, constant low muttering delirium set in (never violent that I remember), and this slided gradually into coma during the last day or two of life. The body acquired an urinous sort of smell.

The ventricles of the brain contained generally a few drachms of bloody looking serum, which on one or two occasions was tested by one of the assistants, and found to contain urea.

"The most peculiar appearance about the patients was the constant tremor. I think Mr. Colles used to dwell in his lectures upon this, as a character of urinary delirium; I have seen it in delirium connected with retention of urine (not in fever), which is the only case in which I ever saw anything resembling the cholera cases.

"Believe me, my dear Doctor, faithfully yours,

"A. Hudson.

"*Doctor Aldridge.*"

I strongly suspect that frequently urinary delirium and coma are mistaken for cerebral disease; and a careless *post mortem* may even strengthen the opinion. If cerebral symptoms exist during life, and the pia mater is found injected after death, these phenomena appear to corroborate each other; yet the brain may be vascular from either of two causes—from a sthenic or asthenic hyperæmia having existed during life, or from the death having been caused by syncope.

A young woman, who had frequently had symptoms of abdominal disease, came into Saint Vincent's Hospital under the care of Mr. O'Ferrall, suffering under the ordinary symptoms of ileus, obstinate constipation, vomiting of a stercoraceous character, &c. By the employment of large emollient injections, administered by the long tube, the constipation was overcome, but only to give place to enormous rice-water discharges, both from the stomach and bowels; afterwards suppression of urine came on, which was followed by muttering delirium and stupor, the prostration rapidly became extreme, the pulse imperceptible, and she died. At the autopsy we found the original cause of the disease to have depended upon the disposition of the transverse colon; this portion of the intestines was in shape somewhat similar to the letter U, dipping nearly as far down as the pelvis; at the same time the ascending colon was tied to the abdominal walls by a strong band of old adhesion. The explanation of the symptoms of ileus is, most probably, that a mass of hardened fæces, weighing down the pendent arch, produced a strangulation at the

upper edge of the adherent portion; and, perhaps, the absorption of fæcal matter may have caused the cholera.

Upon opening the head, the pia mater was found more than usually vascular; and a section of the brainy substance presented a great number of bloody dots. It might be supposed that the cerebral symptoms, therefore, depended on cerebral engorgement; but, upon turning up the base of the brain, I found the basilar artery and the circle of Willis full of blood. This led me to suspect that the cerebral congestion did not depend upon any lesion existing during life, but upon the manner of death. To prove this, I accordingly opened the thorax; and upon examining the heart I found both ventricles equally dilated and equally full of blood. The death had been by syncope. For convenience of description, I have mentioned the appearances of the brain after those of the abdomen; but it is right to state that the head was examined in the first instance.

AIR FROM THE URINARY PASSAGES.

The following case, which I owe to the kindness of my friend, Mr. M'Dermot, is possessed of peculiar interest. I do not recollect having read of any other of the same kind.

"13, *Fortescue-terrace.*

"My dear Doctor,—I regret that I am obliged to trust to my memory to enable me to give you the information relative to the case of secretion of air by the bladder and urinary passages; for, although I took notes of it at the time, I cannot just now lay my hand on them.

"The person who was the subject of this peculiar affection had been recommended to me by a friend in the country, and during the period I treated him resided there. He came up to town on three occasions, at intervals of three weeks or a month, to enable me to examine him. On his first visit he stated that twelve months before (this was in the autumn of 1841), he was attacked while in Liverpool with excessive pain in the bowels, and was treated for inflammation; bled freely, and otherwise

actively treated. He recovered with difficulty, and, on resuming his business (which required much and continued exertion), he became subject to the urinary disease. He stated, that it made its attacks after taking exercise, these being preceded by chill, rigor, and febrile disturbance. During the attacks he suffered from excessive pain in the region of the bladder that increased to agony when he attempted to make water; the urine was loaded, thick, and ropy, and threw down a deposit, which gave me the idea of being feculent; and when he made water there was generally one or two puffs of air from the orifice of the urethra, at the termination of the flow of urine.

" This fact I verified by causing him to press the end of the penis, beneath the surface of the urine just discharged, and I distinctly observed the bubbles of air; I regret not having collected them, to have them analyzed. He himself first told me of the circumstance, and said he thought the air got into the bladder from the bowels, for that whenever he passed wind he felt pain in the region of the bladder. The urine had at times a remarkably fœtid odour. (You will recollect your analysis of it).

" He had lost flesh considerably; had a sallow cachectic look; was dyspeptic and irritable, and could not sleep; his habits were temperate, did not drink any wine or spirits; he was originally a strong built, large man; was 46 or 48 years of age; married; had no children; never had pox; had a clap 25 years ago.

" He had tried many remedies, and been under the care of different medical men, in Liverpool, Dublin, and the country.

" I examined the bladder and prostate. Much pain was felt as the catheter was passing through the prostatic portion of the urethra; but that gland did not appear enlarged when examined through the rectum.

" I resorted to a variety of means to sooth the irritability of the bladder; and at length was induced to try the effects of oxide of silver, having seen a paper by Mr. Lane in the Lancet, wherein this substance was recommended in vaginal discharges,

diarrhœa, &c. I prescribed for him fourteen grains, divided into twelve parts, one to be taken three times a day. He took ten of them, and then wrote to me to say they disagreed with his head and stomach, that the pain had recurred in his bladder with great severity, and requesting me to allow him to discontinue them. I ordered him some carminative medicine, and was soon after gratified to hear that he was much better. Finally, he has not since had a recurrence of the attacks, though taking much active exercise, and living more generously than he had dared to do for a long while. He has got fat, and I suppose I may say, cured.

"'I have much doubts about this case,' as the lawyers say. Could there have been a fistulous opening from the intestines into the bladder? If so, was it the result of the intestinal inflammation which preceded the vesical disease? This might account for the secretion of air; and the pain caused by breaking wind would seem to countenance it. It would be satisfactory to me if your more extended experience can bear out this supposition.

"He was under my care for a period of six months; but as I mentioned, I saw him but three times. He wrote to me, however, a weekly statement of his health, and on this I acted.

"Will you excuse this rough sketch, as I am just now very much engaged. If you can make out this writing, you may depend on the statement being accurate.

"I remain, dear Doctor, yours very truly,

"Ralph M'Dermott.

"*Dr. Aldridge.*"

Although Mr. M'Dermott's hypothesis with respect to the nature of the foregoing case appears very reasonable, we must recollect that it may be accounted for on other principles. We have evidence that the mucous membrane of the intestines, the serous membrane of the peritoneum, and pleura, and the skin, are capable of secreting air; and there appears no *a priori*

reason why the lining membrane of the bladder should not, under certain circumstances, do so likewise. It seems in favour of this view, that no urine was discharged by the rectum in this case; and the specimen of the patient's urine which I examined, and which is alluded to in Mr. M'Dermott's letter, was that of ordinary chronic cystitis.

ART. IV.—*Observations on the Climate &c., of Van Dieman's Land.* By WILLIAM J. POWER, Assistant Surgeon, 5th Dragoon Guards.

THE following remarks on the climate of Van Dieman's Land, and the general state of health in that country, are founded on the experience of three years' residence there. During that period, though for the most part living in the capital, Hobart Town, the writer visited every portion of the Island where a settlement had been made, and many of the more remote districts which are not even yet inhabited. If, at the time, it had appeared probable, that an opportunity would be so soon afforded him of making known to the profession the result of his observations, every effort would have been made to render them more complete, and authentic statistical calculations obtained, which might have assisted the reader in drawing his own conclusions. These imperfections, it is much regretted, cannot on the present occasion be properly remedied, partly on account of the distance, and partly, because many of the notes which were made have been lost, while changing from place to place, during a long and severe illness. As, however, very vague and erroneous opinions prevail on the subject, and owing to the immense tide, both of emigrant and convict population, which is constantly flowing to that colony, an intimate knowledge of it is becoming daily of greater importance, these few remarks are hazarded, rather for the purpose of giving more correct general ideas about it, than with a view of supplying in detail the deficiencies on that head which at present exist.

Van Dieman's Land is situated between the degrees, 41° and 44° south latitude, and 144° and 149° east longitude. This situation, though in fact ten degrees nearer the equator than Great Britain, affords a very similar climate in point of temperature,* to that which is experienced in the latter place; for, though more immediately under the influence of the sun's heat, the effect to be expected from such a locality is counter-balanced by the winds, which blowing uninterruptedly over the ocean from the perpetually frozen regions of the south, arrive there, without having their coldness modified, as occurs in the northern hemisphere, by a transit over large tracts of land. In this way, a medium temperature, a kind of balance as it were, is established, and extremes of heat or cold seldom continue for more than a very short period.

This constant struggle between the cold winds of the south, and the heated air of the land, constitutes the premises from which has been inferred the great equability of temperature supposed by strangers to exist in that country; but, though the inference is just in general terms, experience proves that it is not so correct when examined more in detail. Thus it may be observed, that between the *different seasons,* the variation is comparatively trifling, the thermometer frequently standing as high in winter as it does in summer, and *vice versa;* but at *all* seasons, the residents, particularly those living near the coast, are liable on *the same day* to experience the extreme heat of summer and the cold of winter; the change also frequently taking place, with a rapidity and suddenness which defies preparation, and is consequently extremely trying to invalids, or those who are of a naturally delicate constitution. This change is produced by the prevalence or otherwise of the sea-breeze, and its greater or less intensity; and the latter is again dependant on

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* The thermometer, one season with another, ranges from about 42° to 74° in the shade; but when a hot wind blows, it sometimes rises suddenly as high as 108° or 110° in the shade.

local causes, the consideration of which, it is deemed unnecessary to enter upon here.

A little reflection upon the foregoing points, will at once suggest that the mornings and evenings must be the coldest portions of the day, a conclusion which is confirmed by experience, and so well impressed upon the residents, that few of them neglect having fires lighted at those two periods. But it is not hence to be inferred, that the other portions of the day enjoy an unvarying, mild, and even temperature the reverse is the case. To exemplify.—During the early part of the day in the summer season,* about 10 or 11 o'clock, A. M., the heat is sometimes so oppressive that few leave their houses, except particular business requires their presence, and then probably dressed in the lightest description of summer clothing; in a single hour the change may occur, and this extreme heat gives place to a cold, sharp sea breeze, which, searching and penetrating every portion of the frame, fails not to revive rheumatic affections in those who have once suffered from them, and too frequently creates them in those who have hitherto escaped. This sea breeze may again die away after an hour or two's duration, and be in its turn succeeded once more by the close and sultry temperature previously felt in the morning. This last condition of the air will then probably continue till the evening brings a change, which may be expected with tolerable certainty, except when a hot wind sets in, a case fortunately of but rare occurrence. From the extreme effects of these changes the inhabitants of the interior of the island are to some degree exempt, as, owing to the very hilly nature of the country, the strength of the breeze is broken before it reaches them.

The year never passes over without a more or less frequent occurrence of hot winds. They seem to be confined to the spring

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* September, October, November form the spring; December, January, and February the summer; March, April, and May the autumn, and June, July, and August the winter.

and commencement of the summer quarter, and blow almost invariably from the north or north-west, the direction where the large continent on which they are generated is situated. For the most part they are few in number and of a mild description, but occasionally the island is swept by one which parches up and blights everything over which it passes. It seldom occurs, however, that they last more than a few hours, and a heavy fall of rain in general follows, speedily effacing all recollection of their visits, unless a blight or similar unpleasant results have rendered their traces such as cannot be so easily obliterated.

Snow is seldom seen except on the summits of the loftiest mountains, the height of which may be said to average from four to five thousand feet above the level of the sea. In those elevated regions the snow remains unmelted for six and frequently even for eight months in the year. It very seldom indeed makes its appearance in the valleys, and when it does, it falls in such small quantities that it is dissolved almost before reaching the ground. Slight frosts occasionally occur in these latter situations during the night, but every trace of them also disappears as the morning advances.

The appearance of the country is very peculiar, consisting of a succession of conical hills, extending as far as the eye can reach, and thickly covered to their very summits with trees, mostly gum and peppermint. Here and there extensive plains or prairies are met with, but they are always bounded by this same description of hill, which, when viewed from a height, gives the entire country the appearance of an immense undulating forest, buried in almost perfect solitude and silence. Water is scarce, except to the westward, the as yet unoccupied part of the island; there a chain of lakes exists. The few rivers which traverse the country, though tolerably full and rapid during the rainy season, in the summer months often present nothing but a dry, rocky bed. Amongst this number, however, it is not to be supposed that the Derwent and Tamar are included; the latter river, properly speaking, is, in its whole course, only an arm of

the sea ; and the former for a considerable distance is much the same ; nearer to its source, however, the above remarks are applicable to the Derwent as well as to the minor rivers of the country.

During nearly the entire year, but especially in the autumn season, the clouds are lofty, the sky remarkably clear, and the air dry and highly rarefied. This condition of the atmosphere appears to give to animal life in those countries a degree of buoyancy and elasticity which is nearly unknown elsewhere. The extraordinary quantity of work which a horse will perform there on very indifferent feeding and worse putting up, is an object of daily observation ; and even in the human species there seems to be a capacity for overcoming and enduring fatigue, which, in some instances, can scarcely be credited. The exhilaration of spirits too which is occasionally manifested during the long excursions into the interior which the settlers are in the habit of making on horseback, is very remarkable, and would probably, if accurately investigated, assist in leading to some satisfactory explanation for the frequent occurrence of mental derangements in those countries.

It has been advanced, and was for a time a subject of popular belief, that certain diseases did not exist in Van Dieman's Land. The principal among the number of these were pulmonary consumption, hooping cough, and some of the eruptive fevers, such as measles, scarlatina, &c. Another report pretty confidently announced that the climate exercised some peculiar and inexplicable influence over the female constitution, more especially the uterine organs, whereby a healthy state of their functions was produced, and local derangements causing sterility entirely removed.

There certainly are not now, whatever may formerly have been the case, sufficient grounds for the colony's possessing the reputation abovementioned with regard to pulmonary consumption. Cases of tubercle in the lungs, though by no means of such frequent occurrence as in these countries, have been met

with there in all classes of the inhabitants, namely, in those who have emigrated from other places to that part of the world, in those born there of European parents, and in the Aborigines. Amongst the last it has, in the majority of cases, been the fatal malady by which their numbers have been reduced to the miserable handful which now remains of them. Generally speaking, however, consumption is not in that climate a disease which by its frequency obtrudes itself on the attention, excepting in the instance of the Aborigines. The most sufficient reasons for its existence, or perhaps development, among them are to be found in the total change of habits, diet, and general mode of life to which they have been subjected since their capture and confinement. Formerly, living in tribes, they migrated from one part of the country to another, according as a necessity for food, or some more capricious motives swayed them. When the early settlers arrived, their frequent depredations and the consequent reprisals produced mutual feelings of animosity, which but too frequently terminated in a loss of human life. Under such circumstances, and their total numbers besides being small, it was considered advisable to confine them to one district. For this purpose Flinder's Island, a small island in Bass's Straits, was selected, and to it they were all accordingly transferred. Provisions, clothing, dwelling-places, and proper superintendants were furnished by the government, but to a wandering race accustomed to rove at will through a large and extensive country, to procure their food according as they pleased by fishing or hunting, and, regardless of dress, to live where and how they liked, this confinement to a narrow little island, and immediate change from their own free and unfettered habits to the more constrained and artificial ones of civilized life, proved speedily fatal. They died in great numbers, and in the majority of cases pulmonary consumption was the disease under which they sank. An improved system of management, by which their present mode of life is made to assimilate more nearly to their former habits, has of late years been introduced, and it is satisfactory

to know that the mortality at first observed has during the same period much diminished. With the exception then of these poor creatures, and those instances where the seeds of that fatal disease were formed before leaving this country, tubercular phthisis is very rarely met with. It is worthy of remark, however, with respect to the latter cases that so far from being benefited by the change of climate, voyage, &c., to which they have been thus subjected, the course and development of the disease seems to be considerably accelerated, and a fatal termination to ensue at a much earlier period than would probably have occurred had the sufferer remained quietly at home. This point is mentioned chiefly because sea voyages have been recommended, on very high authority, in incipient or threatened cases of phthisis pulmonalis; no doubt this advice was intended to apply only to voyages made in the temperate zones, and the effects of a tedious voyage, no matter how perfect the accommodation on board, through the high latitudes south of the Cape of Good Hope, where during the greater part of the year the weather is cold, wet, and foggy, were not contemplated.

It is equally a popular error to suppose that hooping cough is not to be met with in Van Dieman's Land, or those exanthematous fevers which belong more particularly to the early period of life; they are all of them, however, much milder in form than the same diseases in these countries. The peculiar cough, but without that distressing spasm which here almost invariably accompanies pertussis, and frequently remains harassing and exhausting the patient for a considerable time after the severity of the attack has been subdued, characterizes the affection there also, but in general it easily yields to mild treatment.

Many ingenious explanations have been advanced to account for the reputation which that climate has obtained for its supposed influence over the female constitution. Attention was at first directed to the subject, from observing that many of the female prisoners, who, for a long time, had led the most abandoned and dissolute lives at home, and in whom the occurrence

of such an event was not in the least expected, had, on arriving in Van Dieman's Land, become in time the mothers of large families. The change from a life where excess of every description was freely indulged in, where the constitution was shattered and broken by the most reckless dissipation, to the quiet regular habits, and improved diet forming part of the system of prison discipline adopted there, will probably account quite sufficiently for such results in such cases. But similar results have been observed in a totally different class of society, where this explanation is quite inadmissible. In these cases it seems but reasonable to give some portion of the credit to the tonic and bracing air of the climate, and its general salubrity; probably the sea-voyage may also have some share in producing such a change. The gentlemen who have devoted their attention more particularly to this branch of the profession, will be best able to say how far these surmises are correct or otherwise.

Owing to the changeableness of the climate already described, rheumatism, in all its forms, is of very frequent occurrence, and sometimes very obstinate of relief. In most cases, indeed, where a cure is effected, it is seldom a permanent one, the attacks occurring with greater or less severity during the prevalence of particular winds, or in a particular state of the atmosphere, according to peculiarities in the constitution of different individuals.—The disease, however, which of late years has proved most fatal to all classes, is fever. The form which it generally assumes, though partaking very much of that of typhus, presents some features which distinguish it from most other fevers, and on account of these, it has received the name of "the Colonial Fever."—Its commencement is very insidious, and all the symptoms, at that stage, extremely mild. If allowed to run its course without treatment, it not unfrequently happens that the fever may be ten days or more in existence, before the patient or his friends become aware of the serious nature of his indisposition; after that period, however, the accession of alarming symptoms is in general very rapid. As in typhus, the tongue becomes black, dry,

and shrivelled; but the occurrence of petechiæ, or similar eruptions, is rather rare than otherwise. Head symptoms mostly set in very early in this stage, and are frequently complicated with such derangement of the bowels, as would lead to the supposition that extensive organic disease existed in the intestinal canal. In the majority of cases, however, where *post mortem* examinations have been made, the traces even of ordinary inflammation, in those situations, have been found to be so trifling, as to afford by no means a satisfactory explanation for the symptoms existing during life. But, the point to which perhaps the stranger's attention should be most impressively directed, is the frequent occurrence of relapses, and the extreme danger which attends them. Some time after the fever has apparently quite subsided, convalescence been well established, and the patient gradually gaining strength, it may be observed that the pulse still remains five or six beats in the minute, more frequent than natural. Under ordinary circumstances, this, viewed merely as a symptom of debility, might cause little uneasiness. In the colonial fever, however, it is necessary to watch it with with the closest attention, for the patient can never be considered safe so long as such a state of pulse continues. The outline of a case, which may be considered as affording a fair example of the general characters this fever presents, is here subjoined, as being likely to convey a more clear idea of its nature than could probably be done by a mere description. Before concluding, however, it is right to mention one fact, which may, perhaps, be found of some practical utility. When the fever was at its height, the mortality, among the convicts, averaged as much as *one in seven.* During the same period, out of *seventy-six* cases which occurred among the soldiers, only *one* proved fatal. Although this disparity is capable of explanation, in great measure, by the difference of constitution, &c., between the parties, still, probably, a more material point in favour of the soldiers, was the *promptness* with which the rules of the service enable the medical attendant to detect and treat the very earliest symptoms on their first ap-

pearance. Out of the seventy-six cases alluded to, but five were of a bad typhoid character; and those cases, owing to their having been at out-quarters, and consequently not reported on the *first* appearance of indisposition, were the only ones in which the disease was allowed to remain for some days, without steps being taken to subdue or check it.

In the following case, a detail of the treatment is purposely omitted, in order that the statement of symptoms may be as clear and uncomplicated as possible.

A young gentleman, aged 20, feeling himself rather unwell, sent for medical advice on the 1st ———, 18—. He complained only of a slight headach and distaste for food; but his skin was hot, his tongue white, and pulse somewhat accelerated, neither bounding, however, nor remarkably full.

It appeared that he had of late been living somewhat freely; and a few nights previous, having returned home at an advanced hour, laid down on the outside of his bed, and fell asleep, being at the time half undressed, and a window open near where he lay. For the next three or four days he felt indisposed, but continued moving about, in the hope of finding relief from exercise in the open air; at the end of that time, however, being no better, as above stated, he sent for advice.

For the three following days he became gradually worse; his pulse rose to 100, his tongue became heavily coated, skin hot and parched, and to these symptoms considerable thirst was superadded. On the 4th he became delirious, and his tongue was dry at the tip. 5th. He seemed somewhat improved; pulse 96. 6th. Continued in the same state; but, on the 7th, had become much worse than he had been at any previous period; pulse 108, tongue quite dry, constant delirium. On the 8th, the delirium was much less; and on the 9th it had quite subsided: pulse 88, skin hot, tongue dry.

For the four following days he improved gradually; the dryness of his tongue slowly disappeared, his skin became soft and natural, pulse 88; the only very remarkable feature was, the

great degree of somnolency which supervened on the subsidence of the bad symptoms. This, however, each day became less; and on the 19th he was considered to be convalescent: tongue moist, skin nearly natural, pulse 80.

In this state he continued till the 25th, when he complained slightly of thirst; but on the 27th he distinctly stated, that he did not feel himself so well; he could not, however, particularize any cause of complaint, excepting that his appetite had fallen off, and his thirst become rather more troublesome; pulse 80, skin soft, tongue moist. 29th. He was purged three times, and the tip of his tongue had again become dry. On the 31st day the delirium returned, his tongue was become more dry, skin hot, pulse 80. 33rd. There was constant delirium and pervigilium, tongue quite dry and brown, slight looseness of the bowels, pulse 120. 34th. Constant muttering, and picking of the bed-clothes; *subsultus tendinum;* pulse 140, intermittent, tongue black, dry, and shrivelled. 35th. He was much better, the pervigilium was completely removed; but the delirium remained, tongue dry but softened at the sides, pulse 108, and regular; a tendency to looseness of the bowels still existed. On the 36th day the symptoms were the same, excepting that he had three very loose motions during the night. 37th. The looseness of the bowels was checked; tongue very dry and black, pulse 120, delirium the same. On the 38th day the purging again made its appearance; and, although kept partly in check, always broke out again as soon as the immediate effect of the medicine had subsided. At length he sunk completely exhausted on the morning of the 40th day. No *post mortem* examination of the body would be allowed.

ART. VI.—*An Essay on the Use of* NITRIC ACID, *as an Escharotic, in Certain Forms of Hemorrhoidal Affections; illustrated by Cases.* By JOHN HOUSTON, M.D., M.R.I.A., Surgeon to the City of Dublin Hospital; Consulting Surgeon to St. Peter's Dispensary, and to the Deaf and Dumb Institution; Lecturer on Surgery at the School of Medicine, Park-street; Member of the Society of Naturalists and Physicians at Heidelberg, &c. &c.

CAUSTIC applications, as a means of cure in hemorrhoidal diseases, were formerly much in use; but, latterly, they have been not only discontinued, but even denounced by the Profession, without any reservation or exception whatsoever. Boyer says regarding them: "Aussi a-t-on renoncé entièrement à leur usage." It may therefore appear a rash act to attempt their revival in any form. Nevertheless, a confidence in the efficacy of one of the class, namely, *nitric acid*, in certain forms of the disease which it is the object of this communication to explain, encourages me in venturing thus to give it a public recommendation; and I do so, not merely on the strength of my own experience, but on that also of several other gentlemen, who, having given it a trial, have found in it a remedy at once efficient, safe, and easy of application. The name of my distinguished friend, Mr. Cusack, I am in particular desirous of mentioning in connexion with this subject, because the employment of the nitric acid in such cases has not only the high sanction of his approval, but to him, in an especial manner, is due the first suggestion of its use as a remedy.

Without waiting to attempt to reconcile the diversities of opinion which pervade medical writings on the subject of the pathology of hemorrhoids, I shall proceed to explain, briefly, my own views on this point, so far as I consider a statement of them necessary towards the illustration of the subject of my memoir.

The form in which hemorrhoids most commonly exist, is that of a simple varicose state of the veins; and it would be well if to all such, the names "varices" or "varicose tumours of the rectum" were applied, and restricted. In this sense I shall use these terms. Affections of this nature, in their simple uncomplicated condition, are very common. Few persons, in fact, when they have passed middle age, are altogether free from them. They appear often under particular circumstances, and disappear again when the causes which called them forth, such as pregnancy, constipation, &c. have passed away; and, under such circumstances, the epithet of disease is no more applicable to them than it is to the saphena veins of the limbs, when rendered varicose from similar causes. A proneness to congestion and dilatation in the rectal veins, is laid in the reticulated arrangement of their branches about the anus, and the disadvantageous position of their trunks in reference to the *portal* circulation; but, to meet this, the vessels are endowed with a power of reaction which soon restores them to their original state, if not seriously altered in texture by too great or too long-continued over-distention.

Varices of this nature present themselves at the mucous surface, or under the skin in the neighbourhood of the anus; or they may appear in both these situations at the same time. When turgid with blood, they form violet-coloured tumours, elastic, little painful, disappearing on pressure, but re-appearing as soon as the pressure has been removed. In many instances, these outward dilatations constitute only a moiety of those which surround the rectum, the inferior part of the bowel being frequently imbedded in a mesh of dilated and turgid veins, the presence of which must render the knife, or even the needle and ligature, implements of danger in such cases, whenever they happen to become objects of surgical treatment.

But it is seldom for these varices, in their simple state, that remedies are sought. It is usually for some of the consequences that spring out of them, or some of the complications which at-

tend them, that the medical attendant is consulted;—a circumstance which should never be lost sight of in forming a prognosis as to the amount of relief which may be given, or in determining the extent to which treatment is to be pushed to obtain that relief.

The state of the parts to which the term *external hemorrhoid* is applied, is one of these conditions. The affections bearing this name are at first merely off-sets from the dilated veins, admitting, during their early periods, of the ready ingress and egress of blood from these latter vessels; and sometimes continuing so to admit it for a long period. Such are found under several forms. Sometimes, and that even where no complaint has ever been made of them, they are visible in considerable numbers around the anus, as shut sacs, inclosing small clots of blood; and, as marking their original source, still lined with a fine serous membrane analogous to that forming the inner coats of the veins: these are, evidently, the remains of external piles, which have undergone spontaneous obliteration. At other times, especially when seated in the line of junction between the skin and mucous membrane, the affection assumes the form of permanent tumours, of greater or less magnitude, and of complex cellulated texture. Such tumours (marischi) by forming adhesions to the mucous membrane or skin, and bursting there, under circumstances of congestion, and also by their becoming occasionally the seat of acute inflammation, produce all the inconveniences which characterize a "fit of the piles." They, too, in the course of these changes, may undergo a spontaneous cure, leaving behind them only small fleshy, innocuous tumours; but as long as they continue to swell and bleed, they may be regarded as still remaining in communication with the deeper varices from which they originally sprung. Operations on such tumours, by cutting instruments, are, on this account, usually attended with considerable, sometimes profuse, hemorrhage; but, nevertheless, such operations may be regarded as safe and justifiable, inasmuch as, that any bleeding which arises

may be readily checked by the ligature, styptics, or actual cautery. Accordingly, excision, or destruction with the red-hot iron, are unhesitatingly resorted to, whenever the inconveniences attendant on such affections require a radical removal for their cure.

Respecting the term *internal hemorrhoid,* it is more vague in its application ; and the pathology of the state of parts which it is meant to indicate, is much less generally understood. I believe that the simple varix, or even that more complicated state in which it exists as an external hemorrhoid, is not the condition which most usually produces distress or annoyance, in what are called " inward piles." The amount of suffering is never proportioned to the bulk of such simple varices. We see individuals in whom the veins are so large and prominent, as to appear calculated, mechanically, to produce great intestinal derangement, yet in whom, except in so far as occasional bleeding incommodes them, there is not much distress ; whilst in others, a hemorrhoidal tumour, not bigger than a marble, deranges the entire economy of the body. The state of the mucous membrane covering such varices would appear to influence the condition of the case, more than that of the varix itself. While the mucous membrane continues smooth, and pale, and free from morbid sensibility, there will be little distress ; and the tumours will swell and subside, and even pour out blood occasionally, without the patient being at all aware of the extent of organic derangement which he labours under : but as soon as a relaxed state of the membrane,—a state to which it will soon be brought by the irritation and dragging to which it is subjected by the pressure of the fæces against the tumour of the varix,and the efforts of straining to overcome constipation,—as soon as this state of the membrane is induced, then, the varix coming down under the sphincter, is strangled, made to bleed, and to inflame. Or, when from similar causes, ulceration of the mucous membrane over the varix is established, then, distress of another, and even a worse description, viz., tenesmus, muco-purulent discharges, strainings

at stool, and hemorrhages of dangerous amount are entailed upon the sufferer. Or, still farther, when that state of the mucous membrane, to which the term "vascular tumour" is applied, supervenes, as I believe it often does, upon a varix, then, a simple and otherwise innocuous affection becomes one productive of most poignant suffering.

Of this latter complication,—the *vascular tumour*,—as that to which, in particular, I consider the application of the nitric acid beneficial, I propose to speak somewhat in detail.

The multiplicity of names given to this disease, such as "vascular tumour," "hæmorrhoidal excrescence," "erectile tumour," "spongy hæmorrhoid," "varicose tumour," "internal hæmorrhoid," &c., leads the mind astray, and prevents it from forming any accurate conception respecting its true nature. I am disposed to regard it as an affection of the mucous membrane and sub-mucous tissue, exclusively, and to treat it as such. It may, and I believe it usually has, for its basis, a nuckle or bunch of varicose veins; but it may also be a distinct and independent growth, the result of some other irritation in this region. I have seen it covering the surface of one varix in a rectum, while others in the same bowel have been smooth, and free from any such growth,—the former being the source of much annoyance, the latter giving no trouble at all. (*See* Cases III. IV.) I have also seen the affection, in young individuals particularly, where the veins were quite free from any varicose dilatation, but in whom, after a time, varices formed as the result of the irritation of the vascular tumour. And I have observed that, in almost all cases of inward piles of long standing, no matter whether the affection have begun originally as a varix, or as a degeneration of the mucous membrane, both affections come to be present in conjunction, reciprocally aggravating each other's severity. (*See* Cases I., II., III.)

These tumours vary in size in different patients, from a pea to a walnut. Their number, also, is equally variable. Sometimes there is but one; in other instances, there may two or more; and in others, again, they are so numerous and large as to cause, by

their protrusion through the anus, a permanently widened state of that aperture, and a habitual prolapse, not only of the tumour itself, but also of a portion of the bowel. In the early periods of the affection, the tumours are so soft, compressible, and free from pain as scarcely to be discoverable by the finger when introduced into the rectum, and scarcely, therefore, to be deserving of the term, tumour; but, when of long standing, and especially when they have been permitted to remain down for protracted periods at the water-closet, they acquire an increase of firmness and a tenderness which render them easily detected by such manipulations, and give them a tangible and permanent character. The dragging and pressure to which they are subjected in being pushed out and squeezed by the sphincter in defecation, renders them likewise prominent, and gives to them often a pedunculated or polypus-like form. The surface of the tumour is either granulated like a strawberry, or of a villous aspect. It is of a red colour, and, when protruded from the anus, bleeds from every pore as from a sponge. It is easy to satisfy one's-self on this latter head, by drying the surface of the tumour, when a fresh issue of blood instantly takes place from every point of its surface. The blood discharged, in such cases, is always of the arterial red colour,—a circumstance which often, in itself, indicates the true nature of the affection, and enables us to distinguish it from rupture of a varix. But, nevertheless, although this may be true as regards the direct issue of blood from the part, yet this very fluid, may, if allowed to lie in the cavity of the rectum before being discharged per anum, acquire a dark red, and even a grumous character. (*See* Case I.) The bleeding in the former is also of more frequent occurrence, appearing with every effort at defecation, and weakening the patient more by the frequency and persistency of the drain than by the quantity lost at stated periodical intervals, such as usually takes place in the bursting of varices from over-distention.

Regarding the pathology of "vascular tumours," there are, I believe, two varieties of organic lesion, which, although dif-

fering somewhat as to their origin and nature, produce nevertheless equal inconvenience, and admit of cure by the same means. One of these is that to which the term "erectile" has been applied, from the supposed resemblance of the disease to congenital affections of this class; the other,—a congested, hypertrophied, and tender state of the membrane, the result o irritative, or inflammatory action.

The first is regarded by many as a sort of aneurism by anastomosis of the small vessels of the mucous membrane and submucous tissue exclusively, and may be independent from the first of varices of the general veins about the anus. Mr. Colles, who had an opportunity of examining the structure of one of those tumours in a person who died of another disease, says, "on slitting up the rectum, I saw three blood-vessels, each as large as a crow-quill, running for some way down the intestine and then dividing into a number of branches; these vessels ramified very profusely, and each seemed by interweaving of its branches to form one of these tumours. The trunks and branches were covered only by the lining membrane of the intestine. This examination shows us how inapplicable to this disease are the terms 'varicose tumors,' 'hemorrhoidal excrescences.'" This affection may occur in youth, and has been seen high up in the intestinal canal; but its most frequent seat is the lower part of the rectum. There is not originally or necessarily any pain arising out of it; but, by long exposure in the rectum to many sources of irritation, and by enlargement and prolapse from the anus, it runs into a state of actual disease, of which Cases I. and II. may serve as examples. It differs from ordinary nævi in not being necessarily congenital, but resembles them too much in its persistent tendency to increase in growth. They are, both, affections which equally require operations for their removal.

The second variety of the vascular tumour is of a chronic inflammatory nature, and may be best described by comparing it to the red, villous, tender, hemorrhagic surface exhibited by

the mucous membrane of the eyelids in old cases of chronic conjunctivis. With the latter, too, the resemblance is still farther established by its habit of secreting pus independently of ulceration. I consider Cases III. and IV. to be examples of this form of the affection. Such tumours are apt to form on old internal varices, which, by their projecting into the cavity of the bowel, expose the membrane covering them to more than ordinary pressure and irritation, and thereby become the direct cause of this morbid development. Once established in connexion with the surface of a varix, the two making between them a compound disease, the distressing qualities of such an affection are not slow in exhibiting themselves. Thus, in case No. III., in which there were several internal projecting varices, that only, on which this hypertrophied condition of the mucous membrane existed, gave annoyance, and on the removal of that and that singly, all hemorrhoidal distress subsided. The "master pile" being removed, the others fell back into a state of painless quiescence. As in the foregoing variety, there is no relief for this affection but in destruction of the morbid growth. They both, therefore, differ from the diseased conditions which supervene on external varices, in having no disposition or power to undergo a spontaneous cure; and, consequently, are more likely, at some period of their course, to become objects of surgical interference.

If such be a correct view of the pathology of certain internal hemorrhoids, and I have no doubt that in very many cases it will be found so, then, I would ask, are such severe remedies as those usually employed, viz., the knife or ligature, either necessary or safe? If the seat of the baneful part of the affection lie on the surface, why not rather adopt such means as may remove that surface, *per se*, without extending beyond it, rather than such as may, on the one hand, by going to an unnecessary depth, wound vessels of such magnitude as are capable, when opened, of pouring out blood to the hazard of life; or, on the other, by

the severity of its operation, engender the most painful and the most dangerous symptoms? It is not for me to rehearse all the disadvantages which attend on these modes of treatment; suffice it to say, that no man ever applies either the knife or scissors, or even the needle and ligature, in any such patients, without more or less of misgiving as to the success, or apprehension as to the result of the experiment. It is enough to read the objections to any one of these operations, as detailed by the advocates of the other, and *vice versâ*, to be satisfied of the little confidence reposed by the profession in either.

The properties of *pure nitric acid*, as an escharotic, point it out, in theory, as an agent fitted to take the place of these over-severe remedies, in cases where a superficial destruction of the part to be removed is all that is required; and the application of it to practice has fully proved its efficiency as a substitute. This acid, at the density of 1500, destroys, on the instant, the vitality of the part to which it is applied, by the production of a chemical decomposition of its solid and fluid elements. The depth of the slough which is to follow may be regulated, in some degree, by the quantity of acid laid on the part; and its extent, laterally, may be confined with sufficient exactitude to the limit of its first application, by instantly smearing the whole over with olive oil, which neutralizes its farther corrosive powers, by combining and forming with it a new, but no longer corrosive, compound. The beneficial effects of nitric acid, in arresting phagedenic and other unhealthy inflammations, and substituting in their stead one of a salutary character, recommend it as a remedy little likely, in itself, to do any serious mischief, if applied with the necessary precautions—a guarantee which certainly cannot be extended to other escharotics of equal power. The separation of the slough, after the application of nitric acid, leaves a healthy suppurating surface, which contracts and heals over very quickly.

The nitric acid, then, in its operation on the vascular tumour, combines in itself all the advantages possessed by excision or

ligature, without any of their disadvantages. The tender, tumid, and bleeding surface is removed with little pain and without danger; and, in the cicatrization which rapidly follows, a radical cure is effected. But the good effects do not stop here; not only is a reparation of the worst part of the affection accomplished, but, by the bracing up of the general mucous membrane which follows the removal of the relaxed and diseased part of its surface, other varices which may be present are supported and reduced in bulk, and ulcers, or even fissures, are healed: and these secondary good results may be regarded as not the least important which have taken place on the occasion. The resumption of the natural action of the bowels, and the general improvement in health which follows the application of the acid to a single vascular hemorrhoid, even where several are left behind (see Cases III. and IV.), show an improvement in the state of the rectum generally, greater than could be supposed to arise from the simple abstraction of one from among the number. The contraction of the mucous membrane following the removal of a portion of its extent, acts beneficially on the bowel, in the way, perhaps, that the contraction which follows the removal of it in the operation for prolapsus ani, acts; or in the way in which the removal of a piece of the scrotum, as recommended by Sir A. Cooper, operates in relieving varicocele; or, to use a still more familiar illustration, in that in which a laced stocking operates in remedying a varicose state of the veins of the lower extremities, viz., by bracing and giving support to the relaxed subjacent veins and other textures. The relief, too, which the bowel gains by the removal of such a source of local irritation, contributes, no doubt, in a prominent degree, to the production of the same good results.

The application of the acid may be made in the following manner. Let the patient strain as at the night-chair, so as to bring the tumours fully into view; and, while they are so down, let him either lean over the back of a chair, or lie down in the bent posture on the side on which the disease exists, with

the buttocks over the edge of the bed.* Let a piece of wood, cut into the shape of a dressing-case spatula, be dipped in the acid, and then, with as much of the acid adhering to it as it will carry without dripping, let it be rubbed on the tumour to the extent desired. The due effect of the acid on the part is shown by its changing it to a greyish-white colour. If a superficial slough be all that is required, a single application may be enough; if a more deep one, then, two or three applications of the wood dipped in the acid may be made in quick succession; which being finished, let the part be well smeared over with olive oil, provided beforehand for the purpose. The prolapsed parts should then be pushed back within the sphincter, the patient put to bed, and an opiate administered. The pain of the application is sharp and burning at first, but goes off in two or three hours, and does not again return in the same form. A general uneasiness about the anus, on motion, together with a slight sense of heat, fulness, and throbbing, are felt for a few days; and there may be some little feverishness; but I have not seen or heard of any more serious effects from the remedy. In Case II., a slight stranguary, which was experienced for a short time, disappeared under the mist. camphor æc. opio. The symptoms following the application of the acid are usually so mild as not absolutely to require confinement to bed more than a few hours; although, for many reasons, such confinement may often be desirable. On the third or fourth day, a purgative draught should be administered, when the bowels will be found to yield to the medicine, generally without either pain or prolapse of the rectum. The progress after this to healing is rapid, and free from any disagreeable symptoms.

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* I may here observe, in passing, that any introduction of the finger into the rectum immediately before the operation should be avoided, as the pressure made thereby on the tumours will so reduce their bulk, that they will not for some time come down again sufficiently for the purpose desired. I mention this, because I have seen both patient and surgeon disappointed, by being obliged from this cause to defer the operation to another day.

Case I.—*Vascular Tumour of the Rectum.*

Ellen Connor, æt. 26, a servant; admitted into the City of Dublin Hospital, April 27th, 1840. States, that about five years ago, after much exposure to wet and cold, she became subject to bleedings from the rectum, often repeated, but unattended with pain or prolapse of any kind. At the expiration of five or six months, and not earlier in the course of her ailment, she discovered two small tumours at the anus, coming down when at the night-chair, but returning immediately after, of themselves. At the expiration of another year the tumours had increased in bulk, although still retaining their softness; but they now, instead of receding of themselves, required to be pushed back with the hand. There was now, also, greater frequency and urgency in the call to stool, and superadded to the blood, there was a discharge of slimy mucus and pus from the rectum. The bowels have been throughout constipated, unless relieved by medicine. The bleeding has continued more or less ever since the first, only diminishing occasionally after purgation, to recur in a few weeks, as before. Besides these comparatively moderate bleedings, a more copious hemorrhage has taken place about every three months, with tolerable regularity. Notwithstanding this continued draining of blood, the catamenia have all along remained natural, both as to quantity and periodicity. In the beginning of the past year she got married, but has not become pregnant; and, while experiencing no amendment in her old complaint, has become affected with a leucorrheal discharge.

State on Admission. — Her countenance is completely exsanguis; more so, she says than usual, in consequence of the heavy losses of blood she has sustained within the last few days, and which have been, in particular, the cause of her present application for relief, fearing that she might die suddenly, as she has had several fits of fainting. But, although thus blanched in colour, she is not as reduced in flesh as might be expected, considering the length of standing of her complaint, and the inces-

sant drain upon her store of blood from such repeated hemorrhages. Neither are her limbs or other parts the seat of any dropsical effusions; but she exhibits the ill effects of such losses, in the presence of muscular debility, headaches, palpitations of the heart, and a small dicrotous pulse. The anus, as viewed externally, appears quite natural, and free from hemorrhoidal disease; but, on causing the patient to bear down, three flat tumours, about the size of gooseberries, are protruded from the rectum, pushing open, and filling up the orifice, two at one side, and one at the other. These tumours, as they first come out, are of a bright scarlet colour, soft and painless, but, when allowed to remain down for a few moments, they change to a dark red, and become tense and painful, and blood oozes from every part of their surface. These tumours admit easily of being pushed back into the rectum, the anus having undergone a certain amount of widening by their continued presence in that aperture; but when followed by the finger, they are scarcely to be felt, having subsided on being freed from the strangulation of the sphincter. There are neither ulcers, nor fissures of any kind about the anus or rectum, from whence the extravasated blood, or muco-purulent discharges could flow, nor from whence the painful feelings in defecation could emanate. The case I judge to be one of "vascular tumour" of the rectum.

The bowels being much confined, and filled with flatus, the following draught was administered.

℞. Aq. Cinnam. ʒi.: Ol. Ric. ʒvi.: Sp. Tereb. ʒii. M.

April 28th. Bowels well freed; the blood passed from the rectum, by the operation of the medicine, amounted to several ounces; and although that seen on the preceding day, as issuing from the vessels of the tumour, was distinctly arterial, yet, that now exhibited, as having lain in the bowel for some time before being evacuated at the night chair, was venous, and mixed with dark coagula; pulse 94, weak, and tremulous; she is agitated and desponding, and so filled with the idea that she cannot live,

as almost to refuse consent to the adoption of any decided means for her relief.

Habeat enema anodynum horâ somni.

29th. Slept well; little hæmorrhage; pulse 86, and stronger; more cheerful, and resigned to treatment.

30th. The patient having forced down the tumours, and being laid on her side in bed, the pure nitric acid was rubbed on the right tumour in the manner above directed (see page 103). The cauterized part was instantly smeared over with oil, and then replaced within the sphincter. The application of the acid caused severe pain.

℞. Aceti Opii, gtts. xv. : Aq. Cinnam. ʒi. M.—Statim.

May 1st. Some feeling of heat, fulness and pain in the rectum, but no outward swelling; slept badly; pulse 90; headach; clean tongue.

Ordered to remain in bed; fomentations; an opiate at bed-time.

2nd. Hemorrhage trifling; local uneasiness abated; slept soundly; pulse 86.

Ordered, a mutton chop, and a glass of wine.

3rd. No bleeding since yesterday; slept well; feels much better, and more cheerful; pulse 80. The tumour to which the acid was applied does not now protrude, although the others exhibit themselves, tense, red, and hemorrhagic as before.

Habeat haustum purgantem.

4th. Together with the fæces, a considerable quantity of blood was passed by stool this morning; no other change in the local symptoms.

℞. Aquæ ℥viii.; Sulph. Quininæ g. xvi.; Acid. Sulph. dil. ʒi. M.
St. cochl. duo ampla ter in die.
Mutton and wine to be continued.

10th. All local uneasiness from the effects of the acid has subsided, but there are occasional hemorrhages from the un-cau-

erized tumours; general health greatly improved; walks out of doors.

The same aperient draught as before was ordered, with a view to an application of the acid to the remaining tumours.

12th. The acid was this morning freely rubbed to the full extent of the red, vascular, bleeding excrescences, and the parts then oiled and replaced, as on the former occasion.

Ordered, Aceti Opii gtts. xv. statim.

13th. Suffered pain yesterday for a couple of hours, but it then went off, and she slept; to day she is quite easy; pulse 80; tongue clean; appetite so good, that she wishes for her chop, which is allowed.

16th. For the last three days the amendment has been progressive. There is now neither prolapse of the tumour nor pain during the expulsion of the fæces, and the hemorrhage has altogether ceased. The introduction of the finger can be tolerated, but it causes pain. A little pus stains the finger from the points touched by the acid.

26th. Protrusion of the tumours does not follow any, the most strenuous efforts, of straining; all bleeding has ceased; and all pain and uneasiness have subsided. The patient bears the introduction of the finger without making any complaint, except when the point is pressed to either side, where a small depression, marking the seat of the former tumours, still remains tender to the touch; but, although tender, these spots do not give out purulent matter in any appreciable quantity, and may, therefore, be regarded as healed.

30th. Discharged; completely cured of all the inconvenience and distress attendant on the late affection of her rectum; and much improved in looks and general health.

Case II.—*Vascular Tumour complicated with Varices.*

Mrs. ———, a lady, æt. 52, consulted me in October, 1840, for an affection of the rectum, of many years' standing.

She had always menstruated regularly, and had been married at the age of 40; but had never borne children.

At first she suffered under her infirmity without complaint, regarding it as "only" piles; but, latterly, she has been almost entirely confined to her house, and sometimes even to her couch. She complains of a partial falling down of the rectum on every exertion of the body, accompanied often with an escape of some of its contents, such as fæces or muco-purulent discharges. Whenever the bowels are allowed to be confined, she suffers pain and hemorrhage; and, when relaxed, she is distressed by prolapse, tenesmus, and an irresistible inclination to sit long at the water-closet, from which she is only relieved by lying down and pressing up the tumour within the sphincter. Her health shows all the ill effects arising from oft-repeated losses of blood, local irritation, and distress of mind.

On an examination of the anus in the horizontal posture, no outward appearance of disease presented itself; but as soon as the patient stood up, and made a slight effort of coughing, two tumours, one from each side, protruded from within—soft, red, and perfectly distinct from each other. They admitted of being returned with the same readiness as they had descended, on account of an unusually patulous state of the anal opening, induced by their oft-repeated presence in that passage. The tumors, when fully out, looked as if they formed a complete ring around the opening, like a simple prolapse of the mucous membrane; but, during their return, were observed to separate, so as to constitute two distinct points of disease. On being followed by the finger, the great bulk of the tumours was found to have fallen away, and only a flat, soft elevation, occupied the place of each. The disease, in fact, appeared as a tumour, only when protruded. The subsidence of the congestion in the vessels, which followed their liberation from the sphincter, became the cause of the disappearance of the tumefaction. The general hemorrhoidal veins were varicose, but not to any serious or inconvenient amount. This

latter affection I considered as second, both in origin and in importance to the vascular tumour of the mucous membrane.

As this lady was cognizant of an operation which I had performed on her husband, at a former period, for fistula in ano, she could never (even although a cure had followed in that instance) have been prevailed upon to submit, in her own person, to any remedy more severe than an ointment or a wash; but to any treatment of this latter description she had no objection—regardless of pain, provided that a knife or needles had no concern in the production of it. I determined then on an experiment with the nitric acid; and as I could not be certain of the effect of it on such a patient, or in so confirmed a disease, I thought it best to confine the application of it to one tumour first, and then to be guided by the result, as to whether or not I should use it on the other.

19th. I applied the acid to the left tumour. The usual deadening of the part touched was the immediate result. The protrusion was smeared with oil, and pushed above the sphincter. Twenty drops of the acetum opii was administered on the instant, and a second draught of twelve drops were directed to be given at night, if necessary.

20th. Suffered severe pain, for a short time, after the application; but towards evening got relief, and passed the night in ease, without having had occasion for the second opiate.

21st. Complains of a feeling of fulness in the rectum, and a frequency in the call to urinate. The mucous membrane at the margin of the anus is œdematous, and pain is felt on pressure at the left side of the perineum; but there is very little feverishness, and the patient is perfectly easy when at rest.

Ordered—Camphor mixture. Fomentations. Poultice.

22nd. Stranguary quite gone. Œdema continues, but tenderness relieved. No prolapse. A reddish sero-purulent fluid stains the poultice. Pulse natural; tongue white. Rested well last night.

23rd. Bowels opened by an oil draught. A free evacuation, with very little pain. No prolapse at left side ; but right came down as usual.

Beyond the pain of the first application, this lady suffered nothing to cause her to refuse assent to the same treatment for the second tumour. And, accordingly, on the 25th, the acid was applied in the same manner as before ; and with results so similar, except as regards the stranguary, which did not this time ensue, that a daily detail of them appears unnecessary. The protrusion did not again recur. The bowels acted under medicine, with little pain or tenesmus. Some sero-sanguineous discharge escaped at the night-chair and on the dressings, for better than a fortnight; but the anal opening became more contracted and rigid, and the finger could trace the gradual closure of the spaces formed by the acid, until in about a month they ceased to be distinguishable. The mucous membrane, too, inside, which had hitherto felt relaxed and folded, became now, in consequence of the contraction and cicatrization of the inward lesions, more braced and uniform to the feel.

The patient having been thus freed from the affection of the rectum, improved rapidly in general health ; and, for five months after, during which I had occasionally an opportunity of seeing her, had suffered no relapse of the disease.

Case III.—*Varices, with Vascular Tumour of the Rectum.*

M. Creagh, a sergeant in the Constabulary, æt. 34, and in good general health, was admitted into the City of Dublin Hospital, December 1st, 1842, at the recommendation of James Kerin, Esq. For the last ten years of his life, he has been subject to an occasional discharge of blood per anum, showing itself sometimes on his linen, sometimes when at the night-chair ; but, at first, otherwise unattended with any inconvenience or detriment to his general health or occupations.

About four years ago, he noticed the occurrence of a soft protrusion at the anus when at stool, but which, as admitting

easily of return, and as not being accompanied with any new inconvenience, save an occasional feeling of itching and fulness at the anus, with a tendency to constipation of the bowels, he disregarded. But, in the course of the succeeding years, the protrusion became frequent and painful, and attended with a discharge of pus and mucus as well as blood; and, within the last year, especially, since his being engaged in some duties requiring much standing, it has become so bad that he must now either submit to an operation for relief—an alternative of which he has a very great horror—or resign his place, together with a prospect of promotion, which is at hand.

State on Admission.—Outside the anus there is no appearance of disease; but, on opening that orifice, distended veins show themselves on both sides in the form of soft, smooth, bluish, slightly elevated projections, each about half an inch in diameter, covered with healthy unbroken mucous membrane, and free from pain, inflammation, or disposition to hemorrhage. On the left side, close above these varices, there is a vascular tumour, broad and prominent, like a strawberry, and painful to the touch. This tumour descends readily by straining, so as to protrude from the anus, and even to bring with it, to a certain extent, the other piles. When thus exposed, it swells, becomes painful, and bleeds at every point of its surface. By walking or standing much, the same kind of protrusion occurs. His linen shows marks of a muco-purulent discharge from the part, although there is no appearance of actual ulceration any where.

The tumour I am disposed to regard as a varix, with a covering of morbidly vascular, hypertrophied, and relaxed mucous membrane, to which latter is due its present enlarged, sensitive, and hemorrhagic condition.

8th. A purgative draught having been administered last night, and the rectum washed out this morning by a lavement of tepid water, the pure nitric acid was applied to the tumour, in the presence of Professors Benson and Williams, and Mr. Kerin, and not only laid on, but rubbed into, its substance, by

several applications of the stick which conveyed it; the part was then smeared with oil, and pushed back again beyond the sphincter. The man got an opiate, and was put to bed.

9th. He suffered severe burning pain for a few hours after the application of the acid, but then fell into a perspiration, and towards evening became quite easy. He slept well last night, and this morning feels no pain in the part, except when it is pressed on. Pulse 80; tongue white; stomach sick, tense, and uneasy from flatus.

℞ Infus. Menthæ. ℥ vii.; Tinct. Zinzeb. ʒ vi.; Aq. Laur. Cer. ʒ iss.
M. fiat Mistura. Sumat cochl. duo ampla tertiis horis.

10th. The only local sensations are a slight degree of heat, fulness, and throbbing; pulse 76; much relieved of the flatulence.

Ordered to get out of bed. Occasional fomentations.

12th. A sense of weight in the rectum, accompanied with a desire to go to the night-chair.

℞ Inf. Sen. C. ℥ i.; Tinct. ejusd. ʒ ii.; Pulv. Jal. gr. xv.; Sulph. Magnes. ʒ ii. M.
Fiat Haustus, statim sumendus.

13th. Bowels moved several times, with very little pain; no appearance of blood in the evacuations, and no prolapse with them. Some pain on pressure along the right side of the anus, but no deep hardness to be felt. Allowed to leave hospital for a few days.

20th. Returned to show himself. He feels no pain or protrusion of any kind, or desire to sit long at the night-chair, such as he formerly experienced. There is neither sanguineous nor purulent discharge to stain the fæces, the tympanitis is gone, and the bowels are regular. The finger cannot discover any tumour inside, and the only sensation produced by its introduction, is a prickling at a point, the seat of the former disease. There is no deficiency to be felt commensurate with the amount of surface destroyed by the acid. The loose mucous membrane would appear to have contracted over the cavity, so as to have

reduced it to a very small compass before, and even independent of, the actual occurrence of cicatrization; for, if this small spot be pressed at all roughly, the finger receives from it a stain of blood.

28th. He reports that, yesterday, in order fully to test the value of his cure, by trying it on the grounds on which he had hitherto felt himself most crippled by it, viz. in walking, he exerted his powers in a walk of upwards of seven miles, and had the satisfaction of finding that, neither while engaged in the exercise, nor during the evening after, did he experience uneasiness, prolapse, or discharge of any kind. On examination, per anum, no pain is produced, nor are any traces, either of the tumour or of the cavity formed by its removal, at all appreciable. He looks well; his bowels act regularly without medicine, which, in itself, is a great improvement on his former state; and he expresses himself as having been put into the enjoyment of excellent health and spirits.

This man returned, in a few weeks, to his duty; and I have just heard that he continues (now two months) free from any relapse.

Case IV.—*Varices with Vascular Tumour of the Rectum.*

Mr. J. D———, æt. 64, robust and healthy looking, consulted me in August, 1841, for an affection of the rectum, to which for several years he has been subject, but which has been gradually becoming more inconvenient and annoying. He states that he is obliged to take aperient medicine every week; that he cannot walk or go to the water-closet without a descent of a part of the bowel, which then bleeds and is painful; that latterly, even while sitting, the tumour works its way into the anal opening, and is pained by coming in contact with the chair; that he feels a continual desire to go to, and remain long at, stool; that his linen, in spite of his best precautions, is often soiled by the discharges; and that, altogether, his life is rendered very uncomfortable by it. He says that for a long time his only disor-

ders were a disposition to costiveness and a feeling of fulness about the anus; and that it is only within the last year and half that such symptoms as prolapse, and pain, and hemorrhage were superadded. He has not observed any thing like periodicity or exacerbations in his ailments, except in so far that he finds himself better when his bowels are soft, and worse when he allows them to become constipated.

On examination, I did not at first observe any outward appearance of disease; but on making him strain, a single vascular body was pushed out of the anus, sticking as it were, half in and half out, and requiring for its return to be pushed back. Its attachment lay at the right side. The projection which it formed was of the size and nearly the colour of a ripe, red cherry; and its surface was soft, villous, and exquisitely tender, and gave out arterial blood when touched. The finger, after pushing up the tumour, could feel little trace of it above the sphincter. The veins inside presented several well marked incipient varices.

This affection I consider to be like the foregoing, No. III., only not so far advanced, and less complicated with other varicose derangement.

Having taken the usual precaution of freeing the bowels well, I applied the acid to the projecting tumour, rubbing it only once, gently, to the turgid, vascular surface. The pain, which was burning at first, went off under an opiate, and did not return again. The patient did not find it necessary to remain in bed more than a few hours; nor did he suffer any distress beyond that, the result of the first application. A purgative, administered on the third night, produced a full evacution, which passed without giving pain. On making an examination on the fourth morning, the following condition of parts presented:—There was no outward swelling or œdema; but when the patient strained, the tumour appeared at the anus; altered, however, greatly in character. It was stripped, as if cleanly dissected to a defined extent, of the vascular membrane which had previously covered it, and now looked smooth, blue, and semi-pellucid like a dilated

vein, with nothing but the delicate coats of the vessel covering the blood. The blood in the vein was evidently stagnant and coagulated; it felt hard and resisting, and did not admit of being pushed away as it had done before the application of the acid, and while it was circulating and in a fluid state. The acid had produced here two distinct and equally important effects. It had, by its causticity burned away the sensitive, relaxed, hemorrhagic membrane, and by its irritative qualities had induced a local phlebitis in the subjacent varix, the result of which was a coagulation of the blood in the part of the vessel so circumstanced; a result in keeping with our knowledge of the effects of phlebitis as a general principle. In some doubt as to what was now best to be done, I applied the acid again to the naked vein and replaced it as before, re-instituting in other respects the same mode of treatment. The pain on this occasion was not so acute as on the former; and on the third day the parts were so easy and free from tumefaction that I was enabled to make an examination, per anum. The tumour could not now be protruded by straining; neither could the finger discover any trace of it inside. The spot could only be known by its being pained and by its giving out a little blood and pus, on being touched. In less than a fortnight, every uneasy symptom, both those attendant on the original complaint and those consequent upon the operation, had passed away, and the patient returned with fresh energy to his usual avocations. This gentleman informs me that up to this date (Feb. 1843), he not only has never sustained the slightest return of the hemorrhoidal affection, but that his bowels, which before the operation required medicine continually, have ever since acted of themselves in the most regular and satisfactory manner. He considers that the removal of the tumour was followed by a complete renovation in the general state of his health.

It is scarcely necessary for me to observe, that, in all these cases, the ordinary palliative modes of treatment had been va-

riously, and at different times, attempted; and that they all were in a state to call for active surgical interference. They were all cases to which, according to the present established rules of practice, ligatures would have been applied, and I will take upon me to say, applied, if not without success in one or two of the patients, at least to be productive of severe and protracted sufferings. One important point in recommendation of the treatment by nitric acid is, its immunity from danger and from pain, or subsequent tedious confinement; for, although in the cases above cited, severe pain and confinement for a few days to bed are spoken of with candour, yet these conditions are not to be taken as the measure of the results to follow in the generality of such cases. The anxiety felt for the success of a new remedy, by increasing my apprehensions regarding it, magnified the sufferings of the patients in my eyes, and impelled me to take precautions for their mitigation beyond, perhaps, their real urgency or necessity, and certainly beyond what I have since experienced in other cases, which, in the confidence of success, I have regarded with more indifference; for, in fact, I have since several times known it to happen, that, after the first feeling of pain, the effect of the caustic, had subsided, the patient has continued to transact his ordinary affairs as usual.

A question of practice may arise, in cases where two or more vascular tumours coexist requiring the application of the acid, as to whether both or all should be touched in the first instance and at the same time? I believe such will, in general, be the proper course for adoption. The severity of the remedy has been shown to be moderate, or such, at least, as not to forbid its application to two points of surface, more than to one; and, besides, the great advantage of completing the operation at once, and of having the time for the accomplishment of the cure thereby materially abridged, will be secured by the adoption of this course. The circumstances of the case must, however, often determine such a matter more than any preconcerted rules.

But, let me not be misunderstood as to the cases for which I

recommend the use of nitric acid. I do not speak of it as a remedy for all kinds and degrees of vascular tumours or internal hemorrhoids; nor as one to supersede entirely the knife or ligature. There are cases, no matter how they may have commenced originally, in which, from long standing or other causes, all the textures in the neighbourhood—blood-vessels, skin, mucous membrane, cellular tissue, &c., have become so implicated, that scarcely any one part appears worse than another; and in which some operation, if any, of a more sweeping nature must be had recourse to. For such, the knife or ligature may, according to the choice of the practitioner, be employed. The acid is, according to my experience, adapted especially for cases of more common, every-day occurrence; cases in which the disease, although not involving immediate danger, yet keeps individuals miserable, and interferes with them in the discharge of their ordinary duties of life; cases, in short, which astringents will not cure, and for which, excision or ligature would be unnecessarily severe remedies.

But, in speaking thus cautiously of the extent to which the acid is applicable, I believe that I am recommending it within the range of its power and applicability to the cure of hemorrhoidal diseases. Cases I. and II. may be regarded, perhaps, as among the class of extremes in severity; and the case of a medical gentleman of eminence, cured of long continued and aggravated vascular tumours of the rectum by the nitric acid alone, is well known in this city.

And, farther, I have reason to believe that the beneficial application of this remedy is not confined exclusively to such cases as I have been recommending its use in, viz., vascular tumours. In experimenting with it on these affections I have found that the varices joined with them in some instances, were also removed by the same application.

In Case No. IV., the subjacent varix, which showed itself as such after being stripped by the acid of its tender vascular covering, disappeared under the action of a second touch of the

caustic. And, in a very aggravated case of vascular tumour complicated with large internal varices which my friend Professor Hargrave brought me to see, both one and other were removed by separate applications of the acid. This patient, a respectable married woman, who for years had endured continued prolapses of both tumour and piles, was effectually cured by this treatment; and has since borne children without suffering relapse of the disease. The disappearance of such varices under its use may be brought about in three ways: first, by the direct action of the acid on the whole substance of the tumour, producing a slough thereof to its entire depth; secondly, by the extension of the inflammatory action to the sac of the varix, inciting there a local phlebitis and a consequent coagulation of the blood and obliteration of the venous cavity; and, thirdly, by the destruction of the mucous membrane, simply, without obliteration of the sac—the remedy in this instance being derived from the support which the varix thereafter receives from the cicatrized and tightened membrane. However, as this paper was undertaken solely with the view of recommending the acid for the cure of what are understood by the terms "vascular" or "strawberry-like" tumours of the rectum, I must abstain from entering here upon new ground; reserving such farther observations as I may have to offer on these topics to some more befitting opportunity.

31, *York-street.*

BIBLIOGRAPHIC NOTICES.

Praxeos Medicæ Universa Præcepta. Auctore Josepho Frank. Pars III. Vol. II. Sect. 1.

Continens Doctrinam de Morbis Tubi Intestinalis, quam exposuit. Fred. Aug. Benjn. Puchelt.

We have received this portion of J. Frank's great work, with a prospectus of the whole now in the course of publication, and consisting of four parts, each part forming several volumes.

There can be little doubt, that, when completed, this will be the greatest, if not the best book on the practice of medicine extant. Its prodigious research will alone render it invaluable to the medical scholar. We fear that few students or practitioners of these degenerate days will be likely to make the ten or twelve bulky volumes of Latin their manual of physic; but they must have a place in every good library, and will meet with few that can bear comparison with the mass of practical information and extensive learning that they contain.

The contents of the portion submitted to our examination are Congenital Deformities, their abnormal form and situation; Enteritis; Suppuration; Ulceration; Wasting and Perforation of the Intestines; Induration; Tubercle; Melanosis; Fungus; Scirrhus and Cancer; Morbid Adhesions; Polypus; Œdema; Hydatids; Stricture and Narrowing of the Intestines; Intestinal Worms; Flatulence; Colic; Constipation; Ileus; Diarrhœa; Dysentery; Intestinal Hæmorrages and Hæmorrhoids; and Cholera.

On these subjects countless authorities are adduced, and prove the Author, or his Editor, to be not only familiar with the standard medical writers of Europe, including our own Abercrombie, Baillie, Cheyne, Bright, Pemberton, Stokes (who, however, appears in his German dress), &c. &c. &c., but also well read in the periodical medical literature of this country and America. That these references are made from actual research

we have satisfied ourselves, by examining the works referred to, in several instances, and finding the very expressions of the authors employed in the quotation. This obviously gives to such references a value not always possessed by *professedly* learned books, and which is, moreover, increased by the judgment shown in the selection of points worthy of notice—as in the allusions made in two instances to Dr. Stokes, one referring to his valuable observations on the connexion between gastro-duodenitis and jaundice; the other, in the following passage, to his diagnosis of enteritis by increased pulsation of the abdominal aorta.

As such a work as the present does not admit of analysis, we shall merely take an example at random, from which our readers may form some opinion of its merit. The history and symptoms of mucous enteritis are thus sketched. We omit the references.

Mucous enteritis, i e. inflammation which has its seat in the mucous membrane of the intestines, its follicles and glands, could scarcely have been rightly known before the time of Bichat; though it may be conjectured that to it must have belonged that which has been mentioned by the name of latent or mild inflammation of the intestines. Ludwig observed in his dissections of those destroyed by continued, malignant, or exanthematic fevers, that almost always some portions of the intestines appeared inflamed without any previous violent pain, and Morgagni adds, that in short fevers the intestine was inflamed, the villous coat only is no doubt meant. But subsequenly Pinel, Perratean, Petit, Pemberton, Jackson, Crampton, mentiont he same thing in explicit terms. Ere long Broussais presents himself, who, indeed, correctly made the same observation as Ludwig; but thence drew the wrong conclusion, that this special inflammation was the source and centre of the malady wherever this might have its seat. There was subsequently much debating upon this subject among the French writers; and that the dispute might be settled, the Academy of Paris proposed their prize question (Existe-t-il toujours des traces d'inflammation dans les viscerès abdominaux après les fièvres putrides et malignes?) Abercrombie, also, with Gregory, Fosbrooke, Marsh, Bright, De Pommer, Bischoff, Leper, Becker, Horner, Christie, Wisbach, Kohler, have treated of the same subject. On the morbid anatomy, Billard and Gendrin deserve the highest praise.

Mucous enteritis either is confined to the mucous membrane only, or extends to the submucous and muscular coats; but, if it has its seat in the latter, it manifests the signs of general enteritis before enumerated. If, however, the villous coat only is affected, very different and milder symptoms appear.

The pains which mucous enteritis excites are not severe, nor are they much increased by pressure on the abdomen, but they come on in fits frequently, and resemble colic. The fever, when excited by the inflammation itself, remits, and is occasionally milder, and has short exacerbation; an increased pulsation of the arteries of the abdomen is felt (Stokes, Vorlesungen, p. 65). The tongue is covered with a white mucus; it is red in the centre, or at the apex, and the papillæ are prominent. The patient occasionally vomits; hiccup sometimes occurs. The substances taken for food excite a great feeling of heat, and a sensation as if they would pass rapidly along the intestinal tube. The alvine discharge is often infrequent where the mucous membrane of the ileum is inflamed, but constantly liquid and frequent when the mucous membrane of the great intestine is inflamed, at times being copious, at times scanty, sometimes attended with tenesmus; and mucous, serous, or bloody fluid fæces are discharged in some cases from the commencement of the disease; bile also healthy or depraved, and food and drink, little changed, are seen in the discharges.

Very frequently, when the disease runs its course favourably, coagulable lymph is excreted, appearing like shreds of boiled maccaroni; but, when the inflammation has been widely diffused, gangrene, ulceration, or peritonitis supervening, the patients not unfrequently die.

A System of Clinical Medicine. By Robert James Graves, M. D., M. R. I. A., one of the Physicians of the Meath Hospital and County of Dublin Infirmary, formerly Professor of the Institutes of Medicine, Honorary Corresponding Member of the Royal Medical Society of Berlin, the Imperial Medical Society of Vienna, and of the Medico-Chirurgical Societies of Hamburg, Tübingen, Bruges, Montreal, &c. &c.

In medical as well as general literature there is a class of works which always rank highly as books of reference, from the circumstance that their materials were originally published in separate parts; and that when the Author had full time for reflection, and the accumulation of new facts, he brought forward the whole in a combined form. Such are the standard works of Abercrombie, Andral, Lallemand, and others; and the present volume is no inconsiderable addition to this important list.

"Having been," says Dr. Graves, "for many years, engaged in giving clinical instruction at the Meath and Sir Patrick Dun's Hospitals, I thought it to be my duty occasionally to publish the results of

my observations in the form either of detached essays, or successive series of lectures; the former were printed in the Dublin Hospital Reports, and the Dublin Medical Journal, the latter appeared in various English periodicals, but chiefly in that excellent publication, the London Medical Gazette. Many of the detached papers were subsequently translated into French, German, and Italian, and several courses of the lectures were published by Doctor Robley Dunglison, in a separate volume at Philadelphia. This has encouraged me not only to continue my exertions in the cultivation of practical medicine, but to revise what I had written and compress the whole within the limits of a single volume. It is necessary to mention that the lectures were all originally delivered *extempore,* and were printed from notes taken by a short-hand writer. The reader being made aware of this circumstance, will kindly make due allowance for the many imperfections of style, and the redundancy and repetition which occur but too frequently in this work. In revising the whole, I have been at more pains to improve the substance than to polish the surface, and have rigorously excluded every assertion and conclusion which my subsequent experience has not verified."—*Preface.*

The introductory lectures, given at the commencement of the work, embrace many important views on medical instruction and general pathology. The Author dwells strongly on the importance of a proper system of clinical instruction, and refers, with a just pride, to the success of the German method, which he was the first to introduce into this country, more than one-and-twenty years ago, from which period we may date the advance of Dublin as a school of practical medicine. It is true, that we had organized schools of medicine, surgery, and anatomy, and that clinical lectures were delivered by authorized teachers; but it is equally true, that these means here, as elsewhere, had failed in making the student of medicine what it was most desirable he should be—namely, a practical physician; one who, by a proper training, had been taught to think correctly, to observe accurately, and to acquire that confidence in himself, only to be obtained by learning the phenomena and combinations of disease at the bedside of the patient.

"The importance of clinical instruction is so much felt in Germany, that each school has three distinct medical clinics attached to it, by which means the labour of teaching is divided among the professors, and the number of students attending each is diminished. There is one clinical hospital for the treatment of acute diseases, and another for chronic diseases, while a clinical dispensary is devoted to the care of extern patients. The pupils are divided into two classes—the more advanced, who get the care of patients, and the junior students, who merely look on and listen. When a patient is admitted, his case is assigned to one of the practising pupils, who, when the physician is visiting the ward, reads out the notes he has taken of the patient's

disease, including its origin, progress, and present state. This is done at the bedside of the patient; and before he leaves the ward, the physician satisfies himself whether all the necessary particulars have been accurately reported by the pupil. After all the patients have thus been accurately examined, the professor and his class proceed to the lecture-room, and a list of the patients and the practising pupils is handed to the professor; the cases admitted that day are first inquired into, and the pupils are examined concerning the nature of their disease, their probable termination, and the most appropriate method of treatment; each student answering only concerning the patients entrusted to his special care. During this examination, the pupil's diagnosis and proposed remedies are submitted to the consideration of the professor, who corrects whatever appears to be erroneous in either, and then the student retires to write his prescriptions, while the rest of the cases and pupils undergo a similar examination. At the conclusion, the prescriptions written by the students are read out in order by the professor, who strictly comments on and corrects any inaccuracy or inelegance they may contain. When the prescriptions have been revised and corrected, they are signed by the physician, and handed to the apothecary to be made up and distributed. In some clinics, the price of each medicine is affixed to the bottle or box containing it, in order that the students may become acquainted with the comparative expense of various prescriptions, and may thus be enabled, in private practice, to accommodate, as far as is possible, the expense of the remedies to the circumstances of their patients. The clinic for extern patients is conducted on the same principles; patients who are able to attend, are examined at the dispensary; those who cannot leave their homes are visited by the senior practising students, who always seek the advice of the professor when the case is urgent, or the treatment doubtful. Nothing, gentlemen, can be better adapted than this plan of clinical instruction for the improvement either of the beginner, or of the more advanced student; this daily deliberation and anxious discussion concerning the nature and treatment of each case, is peculiarly interesting, and serves to accustom the beginner to habits of accurate examination, whereby he is taught to interrogate nature for himself, and learns the history and treatment of disease, not from books and descriptions, but from direct observation. The advantages gained by the practising pupils are too obvious to require comment; being obliged to give reasons for every plan of cure that they propose, they are accustomed to a rational and careful investigation of disease; and enjoying the most important of all advantages the early correction of their errors—they commence private practice with a sufficient degree of experience to render them unlikely to commit any very serious mistakes.

"It is evident that, according to the German method, no regular clinical lectures are necessary, as the pupil becomes accurately acquainted with the physician's views of each case, and no step is taken in the treatment without the reasons for it being given. This is the best sort of clinical lecture; the pupils have their doubts solved, and their erroneous views corrected, while the professor is enabled to men-

tion, as the disease proceeds, every thing which he thinks is illustrative of its nature.

"NOTE.—Eleven years' experience enables me strongly to recommend the method of instruction pursued in Germany. Since my appointment to the Meath Hospital, I have had extensive opportunities of observing its good effects. Not a session has elapsed without furnishing proofs in its favour. This system, however, at first met with much opposition, and its introduction was ridiculed in every possible manner; even now it may be doubted whether its well-wishers are as numerous as might be expected. It is still opposed by several narrow-minded persons, whose opinions have much weight with the pupils."—pp. 9, 10.

Ten years have elapsed since the lecture, from which we have quoted, was delivered; and during that time the system has produced the most excellent results; indeed, nothing is more remarkable than the superiority of the clinical pupils to their fellow-students, who unfortunately have been permitted to go on in the old way. The clinical student, under the system first pursued at the Meath Hospital, becomes speedily a practical physician; his eye, touch, and ear are all educated; no mean knowledge, yet one unattainable by books or lectures; he learns the real difficulties and advantages of the healing art; he sees disease, not as nosologists have described it, but presenting infinite varieties and complications. He learns the great art of mental combination—of grasping *all* the phenomena of a case, be they physical or vital, or having reference to time, and of thinking justly upon them. In this way his *medical mind* is formed, the one thing needful to the good physician, and which no course of reading, no multiplication of lectures, can ever create. But he learns more.

Surrounded by suffering, disease, and death, in the fever ward, and in the dissecting-room, he learns to cultivate the noblest qualities of the mind and heart—modesty, charity, patience, caution, promptitude, and courage; and thus qualified, he goes forth on his mission of good, ready to combat disease in whatever clime his fate may throw him, and, in his turn, to become a teacher and disseminator of all that he has learned. We have already spoken of the responsibilities of the clinical teacher. The following specimen of right feeling and manly eloquence we gladly transfer to our pages:

"I would not be understood here as wishing to depreciate any department of human knowledge. Far be it from me. Besides, the attempt would be useless. But I am anxious that you should concentrate all your energies on the proper objects of medical pursuit, and devote the largest share of your attention to those acquirements which will render you good practitioners. I have seen students led astray by false notions, wasting half of the time which should be spent

in hospital, and by the sick bed, in wandering through the fields on botanical excursions, or working in the laboratory, engaged in the solution of some unimportant problem. Now this is not what will teach them to relieve suffering, and cure disease. When I look round me, and behold so many young gentlemen entering upon an honourable and important profession, I feel that my responsibility is great. I consider you all as instruments of good or evil, and cannot help being conscious that I should be guilty of a great crime, did I not use every means in my power to render you able and efficient practitioners. The teacher of clinical medicine, gentlemen, occupies in every nation a post of heavy responsibility. But when he happens to preside over the medical education of those who resort to the wards of a metropolitan hospital—when the metropolis is a British one, and the hospital destined to send forth annually practitioners to every quarter of the globe—to North and South America, to New Holland, to the Cape of Good Hope, to the East and West Indies, and the countless isles which, in either hemisphere, are visited by the British flag, then indeed does that teacher become himself an instrument of good or evil, to an extent which it is fearful to contemplate.

"He who gives instruction to a clinical class in Berlin, Stockholm, Vienna or Paris, has much to answer for, if he discharge not his duties with zeal and diligence. Yet if he fails to make his pupils good practitioners, their errors, however deplorable, are circumscribed within comparatively narrow bounds, and limited in a great degree to their own countrymen. But the British teacher sits in the centre of a circle far wider than Sweden or Prussia, Austria or France; his pupils are to be met with practising in every climate, exercising their art in almost every habitable region of the globe and dispensing the blessings of health to all races of mankind; to the hardy white settlers of Canada, the aboriginal red-skins of North America, the negroes of Jamaica, the Hottentots and Caffres of Africa, and the countless tribes of Hindostan.

"In truth, gentlemen, the British teacher of practical medicine exercises an influence without parallel in importance and extent, and his opportunities of benefiting or injuring his fellow-men are incalculably great. If he neglects his duty, if he teaches erroneously, his negligence and his errors in practice are multiplied indefinitely, by means of those whom he ought to have better instructed; the scene of his guilt—for it deserves no better name—becomes fearfully enlarged, for there is no country so remote that it may not contribute victims to the incapacity of his pupils. But if, on the contrary, he works with zeal and diligence; if he labours conscientiously and pereveringly in performing the important task he has undertaken, a compensation awaits him, to which scarcely any member of any profession can attain. Can any reward exceed in value the reflection that he has assisted, materially assisted, in imparting practical knowledge to multitudes of enterprising young men, who, year after year, leave our hospitals to engage in the sacred duties of the medical profession, throughout the world? Is it not a high privilege to be enabled to combat deat, and chonquer disease, as it were by proxy, in so many different

localities? Can man enjoy a purer, prouder, more gratifying reflection? When I hear that a favourite pupil who has acquired a solid stock of practical knowledge in this hospital, has settled in any particular town or district, I cannot help feeling, on the part of my colleagues and myself, that we have been the humble means of conferring a blessing on the people entrusted to his care; and I cannot refrain from congratulating myself upon holding a situation which multiplies a thousand fold our efforts to be useful, and enables us to stretch forth our hands to heal men of all nations and languages. The hero and the despot may extend a sovereignty over distant regions—may exert an unlimited control over millions of vassals—may dispense honours and rewards, or inflict punishment and death; they may, like Alexander, grieve at the narrow limits of a conquered world, and sigh for other scenes of glory;—but they cannot chase away pain; they cannot bid the burning thirst to cease, or give back repose to the sleepless; they cannot impart feeling or motion to the paralysed, or sight to the blind; and above all they cannot imitate that almost godlike function of the healing art, by which man is enabled to recal to his fellow-man reason long banished, and restore to society the hapless victim of insanity."—pp. 39–41.

Well do we remember the system of teaching, or rather not teaching, previous to the period alluded to. The hospital officer walked rapidly round the wards, followed in some cases by a clerk; with whom he communicated in a low voice, as if ashamed that his prescriptions should be known to the crowd of students, who followed mechanically and uselessly in his wake—worse than uselessly, for they only learned to be careless, slovenly, and supercilious. The physical examination of the patients was conducted in silence; no observation escaped which could tend to instruct; and, if an unfledged pupil had the folly to ask a question, he was met with a stare or a sneer. Such was the method everywhere adopted, when Dr. Graves laid the foundation of a new system, and effected the most important revolution in medical instruction which this country has seen: he was a reformer, and, as such, had old prejudices to contend with, and personal animosities to encounter. He taught, that as medicine was an honourable profession, its students should be treated with courtesy; that, as these students paid for instruction, something more should be given them than the signature of a certificate; that the mere seeing a sick man was of but little utility to him who sought to learn the disease, and its mode of cure; that the teacher should make no secret either of his knowledge or his ignorance, but ever combine the character of a learner and instructor; and, finally, he proclaimed, for the first time, that the clinical teacher had numerous and heavy responsibilities; that the talent had been entrusted to him, not to be buried in the earth, but to be taken to the money-changers, and, at his master's call, to be returned with interest.

We cannot leave the introductory part of the book without observing, that the new Chemical Physiology and Pathology by Professor Liebig, finds but little favour with the Author. After quoting the opinions of Liebig, on the modus operandi of contagion and miasms, he observes:—

"Such is Professor Liebig's theory of poisoning and contagion—a theory which, though it comes to us recommended by the abilities of the first organic chemist of the age, and sanctioned by his anonymous but able reviewer in the Quarterly, can nevertheless be easily proved to rest upon almost as many assumed as *proven* facts. Thus how can Liebig so positively assert that there is no poisonous substance in the fatal sausages? True it is that no chemist has yet insulated such a substance; but Liebig knows better than one else how profoundly concealed any particular animal principle may be by being mixed with a great variety of other animal principles. Thus how long did sugar, in the blood of diabetic patients, elude the searches of chemists? and yet they were looking for a principle with whose chemical qualities they were already accurately acquainted. How much more difficult of detection must the poisonous principle be which exists in so compound a body as a Würtemberg sausage? Besides what chemist was ever sure that he was actually analyzing a poisonous sausage? Here a special difficulty lies, for hitherto there has been discovered no *a priori* method of distinguishing a poisonous from a wholesome sausage until both have been eaten, that is too late for analysis. How long has the poisonous quality of ergot of rye been known? and yet the principle to which its effects are owing, though often sought, has been only lately insulated.

"It is obvious, therefore, that Professor Liebig's main example of his new pathological explanation is not by any means *proven*, and consequently it is unnecessary to follow him into the regions of fancy where he has been enticed by a specious and seductive analogy. Pathology will cease to be a science when the study of facts gives place to such reveries as the above cited passage contains—relative to miasms, contagions, mild cases, severe cases, diseases occurring but once in life, &c., &c. And yet I am sorry to say that one of our most distinguished lecturers, Dr. Watson, has, in the number of the *Medical Gazette* for July 29, 1842, fully adopted these opinions.

In order to give the reader some idea of what Dr. Watson considers to be '*distinct conceptions*,' and '*lights supplied by a theory*,' I beg leave to quote from the Doctor's lecture the following paragraphs:—

"'Moreover, the light supplied by this theory gives distinctness to our conceptions respecting certain deviations from the regular course and type of these diseases; which deviations are not uncommon.

"'Thus the symptoms which precede and ussher in the eruption are sometimes slow, halting and irregular in their progress; appear, and then recede, and reappear, so that we are in doubt what is about

to happen, until at length the disease declares itself in its decided and authentic form.

"'We may suppose this to depend upon some tardiness or interruption of the process, whereby the virus is (to use the ancient term) concocted.

"'Again, the series or combination of symptoms that mark the specific disease is sometimes, as I stated before, *incomplete*. We have the eruption of measles without the catarrhal symptoms; the sore throat without the rash, of scarlet fever. And experience has found that, where the malady is thus imperfectly developed, the protection it confers against its own recurrence is also incomplete. To explain this double failure we may reasonably infer a corresponding defect in the series of changes which the poison tends to produce in the mass of the blood.

"'Glandular enlargements and chronic abscesses are frequent *sequelæ* of those exanthematous disorders. They may be considered to represent the dregs of the reproduced virus, which has been imperfectly eliminated from the system by the usual channels.'

"Very few observations are called for by these surmises of Dr. Watson; and certainly the learned Doctor is rather guarded in his expressions, thus admitting that though he has given in his adhesion to Liebig's theory, yet he seems to view the deductions to which it leads with considerable distrust. Indeed it is difficult to rest satisfied with reasoning which not only assumes gratuitously a certain thing to be the cause of a certain effect, but considers it a corroboration of that assumption, that whereas the effect is irregular in its progress *we may suppose* the cause is so likewise.

"It is still a greater triumph of logic to infer that because a disease is incomplete that we gain anything towards the establishment of the true nature of its cause by saying that we may reasonably infer that a corresponding defect exists in the cause itself. To me the whole line of argument appears delusive, and as to the last paragraph concerning glandular enlargement and chronic abscesses, it seems that Dr. Watson's conclusion involves a contradiction, for he attributes to the virus itself, and that by virtue of its chemical action, the production of several exanthematous diseases, each specifically distinct, and indeed as different from each other as an acid from an alkali, while to the dregs of the reproduced virus, he attributes sequelæ—those glandular enlargements and chronic abscesses which so frequently appear after small-pox, scarlatina, or the measles. According to this hypothesis, three different animal poisons, all acting chemically, produce at first three different diseases, and at last the same disease. With regard to this hypothesis, I may further remark, that when a brewer takes a certain quantity of sweet wort, puts it in a vessel, and adds a given portion of yeast to it, he knows that if he simultaneously fills in the same way fifty similar vessels, the process of fermentation will produce in each thirty times as much yeast as was originally added to the wort. But when the virus of small-pox is introduced into the blood of fifty individuals, is a multiplication of the small-pox matter

thus proportioned to the quantity of blood in each? It certainly is not; *a fact* conceded by the supporters of Liebig's hypothesis, but which they try to evade by saying that the particles of the blood which are susceptible of this particular decomposition and metamorphosis exist in different proportions in different individuals.

"This method of ratiocination is as inconclusive as it is novel, and may be aptly termed, arguing not *in* but *outside* of a circle."—pp. 34-37.

We shall not follow Dr. Graves through his observations on the Theory of Animal Heat; but, before entering on the next topic, shall offer a few remarks on Liebig's Theory of Disease; premising, that we cheerfully admit his claims to the character of a philosophical investigator, in the highest sense of the word. Like most other inquirers into obscure and difficult subjects, his opinions, on many points, have been misunderstood and misrepresented, not from wilful error, but simply from the nature of the topics which he has handled, and handled, we are free to say, in a modest and truth-seeking spirit. It is supposed by some, that he wishes to establish an exclusively chemical or humoral pathology; but his own words contradict this supposition. We quote from the preface to his Organic Chemistry:

"Before the time of Lavoisier, Scheele, and Priestley, chemistry was not more closely related to physics than she is now to physiology. At the present day chemistry is so fused, as it were into physics, that it would be a difficult matter to draw the line between them distinctly. The connexion between chemistry and physiology is the same, and in another half-century it will be found impossible to separate them.

"Our questions and our experiments intersect in numberless curved lines the straight line that leads to truth. It is the points of intersection that indicate to us the true direction; but owing to the imperfection of the human intellect, those curved lines must be pursued. Observers in chemistry and physics have the eye ever fixed on the object which they seek to attain. One may succeed, for a space, in following the direct line; but all are prepared for circuitous paths. Never doubting of the ultimate success of their efforts, provided they exhibit constancy and perseverance, their eagerness and courage are only exalted by difficulties.

"Detached observations, without connexion, are points scattered over the plain, which do not allow us to choose a decided path. For centuries chemistry presented nothing but these points, and sufficient means were available to fill up the intervals between them. But permanent discoveries and real progress were only made when chemists ceased to make use of fancy to connect them.

"My object in the present work has been to direct attention to the points of intersection of chemistry with physiology, and to point out those parts in which the sciences become, as it were, mixed up together. It contains a collection of problems, such as chemistry at present requires to be resolved; and a number of conclusions drawn according to the rules of that science from such observations as have been made.

"These questions and problems will be resolved; and we cannot doubt that we shall have in that case a new physiology, and a rational pathology. Our sounding line, indeed, is not long enough to measure the depths of the sea, but is not, on that account, less valuable to us: if it assists us, in the mean time, to avoid rocks and shoals, its use is sufficiently obvious. In the hands of the physiologist, organic chemistry must become an intellectual instrument, by means of which he will be able to trace the causes of phenomena invisible to the bodily sight; and if among the results which I have developed or indicated in this work, one alone shall admit of a useful application, I shall consider the object for which it was written as fully attained. The path which has led to it will open up other paths; and this I consider as the most important object to be gained."

Some believe that vital phenomena have not only been hitherto unintelligible to us, but must ever continue so—that while the laws of physics and chemistry can be established, the nature of life can never be reached; but this seems a rash opinion, at least there can be no objection to our using in this investigation those instruments of observation and induction which have led to such good results in other sciences. At all events, we are not yet warranted in giving up the attempt, or in believing that the nature of life must ever be hidden from us. The known laws of physics and of chemistry, in relation to inanimate matter, and our observation of vital phenomena in health and in disease, seem means given to us for the great end of the discovery of the nature of life, in which, so far as we can see, there is nothing inherent which is for ever to baffle all attempts at discovery. But, in the meantime, let us not mar the inquiry by premature conclusions, nor seek to embody in expressions what is still obscure, floating, and remote. Here, we apprehend, lies the chief error of Liebig, whose opinions, when examined by the practical man, fail to bring conviction, because the number and variety of the cases which occur to him are so great, that the attempt to "*stretch the formula*" ends in its being broken to pieces.

But we cannot accuse Liebig of attempting to found an exclusively chemical physiology or pathology; of being, in other words, a modern humoralist. He admits the existence of a vital force, which is not chemical, nor electrical, nor magneti-

cal; and which, though having properties in common with all causes of motion, and change in form and structure, in material substances, is yet peculiar, because it exhibits manifestations that are found in no other known force. In this doctrine all must agree; but, when he teaches that this vital force is a peculiar property, becoming sensible when the elementary particles of certain material bodies are combined in a particular arrangement or form, our knowledge, such as it is, of physiology and pathology, forbids our assent to the doctrine.

Again, to the properties ascribed to this vital force, we have nothing to object; it is a force regulated by certain laws, which may be investigated; a cause of growth in the mass of the living animal, and of resistance to external agencies, which would alter the form and composition of the living tissues; a cause of motion and change in the form of material substances; a destroyer of the force of attraction between the molecules of the constituents of food; while it arranges them in new forms, either identical with or differing from the living tissues; a force of attraction between parts having the same composition, and a force of resistance, giving to the living tissues the power of withstanding the influence of external agencies. To all this, and to more that has been written, we fully assent; but, when we come to apply these views of the vital force to the explanation of life, or, what is more important, of the phenomena of disease, we find ourselves again at fault. And, accordingly, Liebig's chapter, which he entitles "The Theory of Disease," will be found the most weak and inconsequential part of the entire work. We shall here quote from Liebig:

"Every substance or matter, every chemical or mechanical agency, which changes or disturbs the restoration of the equilibrium between the manifestations of the causes of waste and supply, in such a way as to add its action to the causes of waste, is called *a cause of disease*. *Disease* occurs when the sum of vital force, which tends to neutralize all causes of disturbance (in other words, when the resistance offered by the vital force), is weaker than the acting cause of disturbance.

"Death is that condition in which all resistance on the part of the vital force entirely ceases. So long as this condition is not established, the living tissues continue to offer resistance.

"To the observer, the action of a cause of disease exhibits itself in the disturbance of the proportion between waste and supply which is proper to each period of life. In medicine, every abnormal condition of supply or of waste, in all parts or in a single part of the body, is called disease."

And again:

"A deficiency of resistance, in a living part, to the causes of

waste, is, obviously, a deficiency of resistance to the action of the oxygen of the atmosphere.

"When, from any cause whatever, this resistance diminishes in a living part, the change of matter increases in an equal degree.

"Now, since the phenomena of motion in the animal body are dependant on the change of matter, the increase of the change of matter in any part is followed by an increase of all motions. According to the conducting power of the nerves, the available force is carried away by the nerves of involuntary motion alone, or by all the nerves together.

"Consequently, if, in consequence of a diseased transformation of living tissues, a greater amount of force be generated than is required for the production of the normal motions, it is seen in an acceleration of all or some of the involuntary motions, as well as in a higher temperature of the diseased part.

"This condition is called *fever.*

"When a great excess of force is produced by change of matter, the force, since it can only be consumed by motion, extends itself to the apparatus of voluntary motion.

"This state is called *a febrile paroxysm.*

"In consequence of the acceleration of the circulation in the state of fever, a greater amount of arterial blood, and, consequently, of oxygen, is conveyed to the diseased part, as well as to all other parts; and if the active force in the healthy parts continue uniform, the whole action of the excess of oxygen must be exerted on the diseased part alone.

"According as a single organ, or a system of organs, is affected, the change of matter extends to one part alone, or to the whole affected system.

"Should there be formed, in the diseased parts, in consequence of the change of matter, from the elements of the blood or of the tissue, new products, which the neighbouring parts cannot employ for their own vital functions;—should the surrounding parts, moreover, be unable to convey these products to other parts, where they may undergo transformation, then these new products will suffer, at the place where they have been formed, a process of decomposition analogous to fermentation or putrefaction."

We have given this quotation as showing the slenderness of the grounds on which Liebig has attempted to found his theory of disease. It will be seen, that to *diminished resistance* he attributes a very large proportion of diseases; so that it is in the modification of but one of the characters of his vital force, namely, *resistance,* that we are to find the explanation of most diseases. It is not uninstructive to compare the different attempts towards making a formula for disease, which we have seen in latter times. We refer especially to those of Brown, Broussais, and Liebig; in all of which disease is explained by a modification of vitality, but under different aspects. With Brown, there were the conditions of sthenia and asthenia, affecting the

whole system; with Broussais diseases were referrible to an exaltation or depression of local vitality; and the first condition was by far the most frequent. While, with Liebig, we have a minus vitality, a diminished resistance, from which flow all those diseases which his predecessor attributed to the opposite condition. It is also remarkable, that as none of these proposers of formulæ were men of sound medical knowledge, so we find that the facts of pathology are inconsistent with their doctrines; and, though the theories and formulæ differ so widely, yet it is the same set of facts that overturns them all. The phenomena of fever, of the neuroses, of specificism, and of the alteration of the fluids, are as subversive of the formula of Liebig, as they are of that of Broussais; for, in essential fevers, we have not only less evidence of the transformation of living tissues than in local disease; but, in many cases, we cannot demonstrate the existence of such a condition at all. The paroxysm of an ague, which arrives at its height in a short time, if produced by change of matter, should be accompanied by remarkable organic alterations. But such is not the fact. The history of the neuroses shows that the most extraordinary examples of the production of force consumed by motion, extending to the apparatus of voluntary motion—we quote the expressions of Liebig—are those in which the least organic change occurs. And, finally, it is impossible to explain the specific nature of diseases, or the specific action of remedies by any theory in which the phenomena of life are made to be dependant on modifications of matter. Giving all credit to Liebig for his efforts to discover the results of chemical action in the living organism, we feel that he has overstretched his formula; and that, were he as intimate with disease at the bedside, and with its results as seen in the dissecting-room, as he is with physical science, he would admit that there are numerous modifications of the living principle, which may or may not produce organic change, but which arise and subside without any alteration that can be demonstrated, of the material parts of our complicated systems.

The Author devotes fifteen lectures to the pathology and treatment of the typhus fever of these countries, and particularly of Ireland. Out of this mass of important matter we shall select a few topics of paramount interest. We may presume that Dr. Graves has ever been a steady upholder of the doctrine of essentialism in fever; and, while giving full weight to the occurrence of local changes in this disease, he has always held them as secondary to the general disturbance.

"In fact, gentlemen, the knowledge we possess of the pathology of typhus fever, is of a *negative* character. Pathology teaches us what typhus is *not*, rather than what *is;* it shows us that it is neither cerebritis, meningitis, pneumonia, pleurisy, gastritis, or enteritis, for

it may exist without any of these, and they may exist without typhus fever; but it also shows that one or other of these lesions frequently arises in the course of that fever, and these require special attention." —p. 54.

The Author does not enter on any explanation of the singular prevalence of typhus in Ireland. The return of mortality by him, and the general mortality for ten years, in the province of Leinster, ending in June, 1841, has been furnished by Doctor Wilde:

"From this document it follows that the mortality from fever in Leinster amounts to a fraction less than one-tenth of the whole mortality, whereas in London the fever deaths do not amount to more than one-fiftieth of the total deaths. This difference becomes more striking from considering that deaths in Dublin from fever are actually nearly double the deaths from the same cause in London. The last census made the population of London amount, I believe, to one million and a half, while that of Dublin is three hundred and sixty two thousand.

"The admirable papers of Dr. Cowan have thrown much light upon the comparative frequency of fever in different parts of Britain, and his tables prove that Glasgow is more unfavourably situated, as regards fever, even than Dublin; for in 1835, 1836, 1837, the deaths from fever alone were 412, 841, 2,180, being, in the relation to the mortality from all diseases, one in 15·6, 10, and 4·7 annually; but as the year 1837 was remarkable for a fearful epidemic, this mortality is over the average, for Dr. Cowan in another place shows, that while in Glasgow, with a population of 200,000, the annual average of fever, deduced from seven years, ending with 1836, has been 1842 cases; in Manchester, with a population of 228,000, it has been for the same period only 497; in Leeds, with a population of 123,000, only 274; and in Newcastle, with a population of 58,000, so little as 39. These numbers bring out, in striking contrast with Ireland, the immunity from fever enjoyed by large English towns, and corroborate the remark already made, that the eastern and central parts of Britain, enjoying a climate more different from that of Ireland, so likewise are much freer from fever than the western parts of Britain, whose climate approximates more to the Irish. It is curious, that in those towns in England which have greater intercouse with Ireland, as Liverpool, Manchester, Bristol, typhus predominates more than in others not similarly circumstanced. It was on this account that Dr. Lombard concluded that maculated typhus fever was imported into England and Scotland by Irish labourers, who go over in such numbers every year to reap the harvest. But from the satistical reports of Dr. Cowan and others, it appears that, as regards Scotland, this explanation is any thing but satisfactory, and it seems more probable that the west of England, Scotland, and Ireland, in which the climate is almost the same, possess the same combinations of circumstances which produce typhus. Nothing, indeed, can be more remarkable than the facility with which a simple cold (which in England would be perfectly

devoid of danger) runs into maculated fever in Ireland, and that, too, under circumstances quite free from even the suspicion of contagion—in truth, except when fever is epidemic, catching cold is its most usual cause. Much has been said and written about epidemics among cattle being simultaneous with human epidemics, and we have the testimonies of Homer and Herodotus in support of the popular belief. I am quite sure that various diseases, such as ague, remittent and bilious fever, &c., &c., may be brought on by miasmata, which, emanating from the earth, may likewise produce epidemics among cattle." —pp. 46, 47.

A little further on he remarks:

"With reference to this question I may remark, that although I have carefully watched the progress of *fever* in Ireland for more than a quarter of a century, I have not been able distinctly to connect its epidemics with any epizootic disease—true it is, that occasionally typhus fever is prevalent at a time that some fatal epidemic affects horned cattle, pigs, and sheep, and from such an occurrence an incautious reasoner might be led to assume a natural connexion between the two epidemics as both proceeding from one cause; a more protracted series of observations will, however, dispel this illusion, for he will then see that the connexion is only accidental—of this the years 1841 and 1842, afforded a remarkable example; for during both, the cattle of Ireland were decimated by a most malignant epizootic, while during the same period I never recollect a greater immunity from typhus; in fact, the wards of the Meath Hospital were often destitute of a single specimen of that disease."—p. 49.

And again:

"In the first place, typhus fever is endemic in this country; at no period from the earliest records down to the present, has it been entirely absent—a fact of which you can easily satisfy yourselves by consulting our old authors, and by referring to the annual reports of the fever hospitals, established through different parts of Ireland. Fever, as I have said, is always endemic in Ireland, but occasionally for one year or one season, or a succession of years or seasons, it becomes much more than usually rife, and then is said to be epidemic. In my report of the fever which devastated the west of Ireland in 1822, I advanced the opinion that such epidemics are brought on by a great dearth of provisions, and their unwholesome quality. These are, no doubt, aggravating circumstances, but that they are not the sole or even the chief causes of typhus epidemics, is evident from what I have since frequently witnessed, viz., the occurrence of fever epidemics during years of plenty, of which 1826 was a remarkable example.

"That fever, in Ireland at least, depends on some general atmospheric change, which affects the whole island simultaneously, independent of situation, aspect, height above the level of the sea, dryness or moisture of the soil, or any other circumstance connected with mere locality, is proved by the fact, that when typhus begins to in-

crease notably in the Dublin hospitals, we may always rest assured that a nearly simultaneous increase of fever will be observed in Cork, Galway, Limerick, and Belfast, as I have on more than one occasion ascertained by writing to the physicians of fever hospitals in those cities.

"For a considerable period there was a great tendency among physicians to refer the origin of typhus, and almost every variety of fever, to malaria, or unwholesome emanations from the soil, produced by the decomposition of vegetable matter. In Ireland facts do not bear out this hypothesis, for as already stated, when an epidemic of fever has become established, it breaks out simultaneously in situations the most different, and in some where no such emanations can be supposed to exist. Thus I have seen a whole family affected in the telegraph, situated at the summit of Killiney, a mountain formed of bare granite—and indeed the granite and mountain districts beyond Rathfarnham, Tallaght, and Killikee, supply the Meath Hospital with its worst cases of typhus. The malarious origin of fever in general has, I may remark, become much less probable since the publication of the official documents connected with the sickness and mortality of the British troops in the Colonies, and from which, as Major Tulloch reports, it clearly appears that fevers of the most malignant character frequently arise in places presenting, to all appearance, a combination of circumstances most favourable to the exclusion of malarious influence, while fever is never endemic in other stations, where all the reputed sources of malaria exist together."—pp. 41, 42.

With reference to the question of contagion, it will be seen that like other accurate observers in this country, Dr. Graves believes that its existence is established beyond doubt; but he is not an exclusive contagionist—that is to say, he admits that typhus fever may and does often arise from other causes, and thus be propagated under a twofold influence; and this opinion must be received by all right-thinking men. It is more probable, too, that the relative activities, so to speak, of these influences, vary in different epidemics, and thus modify their respective characters. So that in one epidemic there may be the clearest evidences of contagion, while in another these may be very doubtful. As, however, the public mind is still unsettled on this point, we shall here reprint, from a pamphlet published by Dr. Whitley Stokes, late Professor of the Practice of Physic, some important calculations made, at his request, by the lamented Bishop of Cloyne:

"I proposed the following problems to a friend particularly acquainted with this species of computation:

"Problem the first.

"An epidemic prevails so severe that one out of seven sickens. A family of twelve is selected in a particular district, before the epidemic has visited it; what is the chance that eleven out of that family shall take the disease, supposing the sickness of one of the

family does not promote the sickening of another, and supposing the family not unusually liable to disease?

"Answer.—The probability against the event is, 189,600,000 to one, if the population amount even to seven thousand.

"Problem the second.

"The same general conditions being assumed, and also that the number of the inhabitants in the district in question is seven thousand. What is the chance that in any family of twelve, within the district, eleven will sicken?

"Answer.—It is above 300,000 to 1 that no family of twelve persons in a population of 7000 will have eleven sick.

"All this according to the conditions that the sickening of one does not promote the sickening of another."—pp. 23, 24.

We cannot enter into a detailed analysis of the Author's lectures on fever, which are full of important and practical precept; but we may draw attention to three points of great importance, which may be considered the most distinguishing features of this part of the work. They are:

1st. The employment of nutriment in fever.

2nd. The exhibition of tartar emetic and opium in certain cases of delirium.

3rd. The use of wine.

4th. The employment of mercury.

It is hardly necessary to premise, that the Author looks on fever as an essential disease, the nature of which has not yet been revealed by morbid anatomy. The following observations must not be omitted:

"Now, when called on to treat a case of fever, there are several things which require your attention. In the first place, you should examine the state of the family arrangements. This is a matter which men are apt to overlook or treat as a matter of indifference, but in my mind it is of no ordinary importance, and should always be attended to. You should never, if possible, undertake the treatment of a case of fever where the friends or relations of the patient supply the place of a regular fever nurse. The mistaken tenderness of relatives, and their want of due firmness, presence of mind, and experience, will frequently counteract your exertions and mar your best efforts. Affection and sorrow cloud the judgment, and hence it is that very few medical men ever undertake the treatment of dangerous illness in the members of their own families. The sympathy which a nurse should have for her patient should be grounded on a general anxiety to serve, and a strict sense of duty, as well as a laudable desire of increasing her own reputation; it is, in fact, a sympathy analogous to that which should actuate a physician. Again, it will not do to have a nurse who has been usually employed in other diseases; your assistant must be a regular fever nurse, and the man who undertakes the treatment of a long and dangerous case of fever without such an assistant, will often have cause to regret it. I could mention to you many cases illustra-

tive of the truth of this assertion. I could tell you, that where I have permitted the continuance of the services of one of the family, or of a common nurse, I have been almost invariably annoyed and disappointed. I now make it a general rule to refuse attending any dangerous and protracted case of fever without a properly qualified nurse."—pp. 60, 61.

After speaking of the importance of having competent medical assistance to stay by the patient and watch every change of his malady, he recommends a practice which was adopted by the late Dr. Cheyne, of having two beds in readiness, from one of which the patient should be changed every twelve or twenty-four hours. The rooms should be properly ventilated by a fire, and the temperature regulated by a thermometer.

"Having made these few general observations on the steps to be taken by those who enter on the treatment of typhus, I shall now proceed to speak of diet and medicines. In a disease like fever, which lasts frequently for fourteen, twenty-one, or more days, the consideration of diet and nutriment is a matter of importance, and I am persuaded that this is a point on which much error has prevailed. I am convinced that the starving system has, in many instances, been carried to a dangerous excess, and that many persons have fallen victims to prolonged abstinence in fever. This was one of the errors which sprung from the doctrines of those who maintained that fever depended on general or topical inflammation. They supposed that fever arose from inflammation, and immediately concluded that, to treat it successfully, it was necessary to reduce the system by depletion and low diet, and to keep it at this point during the whole course of the disease. Hence the strict regimen—the *diête absolue*—of the disciples of the physiological school, and of those who looked on inflammation as the essence of fever. The more the symptoms appeared indicative of inflammatory action, the more rigorous was the abstinence enforced. If a patient's face was flushed, or his eyes suffused, no matter what the stage of the fever was, they said, 'here is inflammation of the brain, and nourishment will exasperate it.' If he had red or dry tongue, and abdominal tenderness, they immediately inferred the existence of gastro-enteritis, and all kinds of food even the lightest, were strictly forbidden. That this proceeds from false notions on the nature of fever is beyond doubt, and I pointed out this fact many years ago, long before the appearance of Piorry's work. Let us, in the first place, examine the results of protracted abstinence in the healthy state of the system. Take a healthy person and deprive him of food, and what is the consequence? First, hunger, which after some time goes away, and then returns again. After two or three days, the sensation assumes a morbid character, and instead of being a simple feeling of want and a desire for food, it becomes a disordered craving, attended with dragging pain in the stomach, burning thirst, and some time afterwards, epigastric tenderness, fever, and delirium. Here we have the supervention of gastric disease, and in-

flammation of the brain as the results of protracted starvation. Now, these are in themselves very singular facts, and well deserving of being held in memory. Read the accounts of those who perished from starvation after the wreck of the Medusa and the Alceste, and you will be struck with the horrible consequences of protracted hunger. You will find that most of the unhappy sufferers were raging maniacs, and exhibited symptoms of violent cerebral irritation. Now, in a patient labouring under the effects of fever and protracted abstinence—whose sensibilities are blunted, and whose functions are deranged—it is not at all improbable that such a person, perhaps also suffering from delirium or stupor, will not call for food, though requiring it; and that if you do not press it on him, and give it as medicine, symptoms like those which arise from starvation in the healthy subject may supervene, and you may have gastro-enteric inflammation, or cerebral disease, as the consequence of protracted abstinence. You may, perhaps, think that it is unnecessary to give food, as the patient appears to have no appetite and does not care for it. You might as well think of allowing the urine to accumulate in the bladder, because the patient feels no desire to pass it. You are called on to interfere where the sensibility is impaired, and the natural appetite is dormant; and you are not to permit your patient to encounter the horrible consequences of inanition, because he does not ask for nutriment. I never do so. After the third or fourth day of fever, I always prescribe mild nourishment, and this is steadily and perseveringly continued through the whole course of the disease."—pp. 62, 63.

The Author declares, that, if he has had more success than others in the treatment of fever, it was owing to the adoption of the advice of a country physician of great shrewdness, who recommended him never to let his patients die of starvation. He quotes from Huxham the history of a gentleman,

"Who obstinately starved himself to death, and would not, for many days, either by force or persuasion, swallow any kind of food, or a drop of liquor. He soon grew feverish, flushed in his face, and very hot in his head; his pulse was small but very quick, in four or five days his breath became exceedingly offensive, his lips dry, black, and parched, his teeth and mouth foul, black, and bloody, his urine vastly high coloured and stinking as much as if it had been kept a month; at length he trembled continually, could not stand, much less walk, raved and dozed alternately, fell into convulsive agonies frequently, in which he sometimes sweated pretty much about the head and breast, though his extremities were quite cold, pale, and shrivelled; the sweat was of a very dark yellow colour, and of a most nauseous stench."—p. 66.

But the Author is extremely cautious in the administration of food, and gives excellent directions for its management.

One of the most troublesome symptoms in fever is tympanitis, a subject on which we have a separate paper, by the Author, in the Dublin Medical Journal. The most novel feature in the

Author's treatment is the exhibition of the acetate of lead, in cases where bowel complaint is associated with tympanitis; he was first led to use this medicine on the recommendation of Dr. Bardsley, for the purpose of preventing the follicular ulceration of the intestines. After speaking of its use in cholera, in which there is commonly a copious secretion of air into the bowels, Dr. Graves observes on the anti-tympanitic powers of acetate of lead, both in cholera and typhus; and dwells with satisfaction on the success which this remedy has had in his hands. With respect to hiccup, which is so often associated with tympanitis, his experience does not accord with that of his colleague, who taught that the period of fever furnished a guide for treatment, and that hiccup, in the commencement of fever, requires a local antiphlogistic treatment, while, in the latter periods, it was to be treated with opiates, antispasmodics, and even stimulants. Notwithstanding this decided difference of opinion, the treatment recommended by our Author squares very nearly with that of his colleague.

The Author is favourable to the employment of venesection, used with caution and during the *stage of rigor*; by which is meant the period of formation, during which the patient complains of recurrent chills, although his skin feels hot to the touch, when examined by another person; it is only during this stage, which may last from twelve to thirty-six hours, that we have a chance of extinguishing fever by the abstraction of blood from the system.

"The physician seldom sees a case of fever until the third or fourth day, and then it is too late to think of general depletion by the lancet. This explains why venesection is so seldom employed in typhus in our hospitals. Moreover, in entering on the treatment of any case of fever at present, you should bear in mind the nature of the prevailing epidemic, and be careful how you proceed with respect to bleeding; and if you take away blood, do not go so far as you would if treating a case of fever under different circumstances, and of a genuine inflammatory character. I know that many persons have asserted that you can bleed in all cases of fever, no matter what the state of debility may be; because this, they say, is only apparent, and depends upon congestion and oppression of vascular action. I do not know how far this doctrine may be applicable to other epidemics, but in the present fever it certainly does not hold good; and no man in his senses would think of adopting it as a guide for his practice. I have seen some of the most intense, dangerous, and protracted cases of fever, commence without any appreciable increase of vascular action, with a soft slow pulse, a cool skin, no symptoms of congestion of any internal organ; in fact, without any thing which would, even in the youngest and most robust habits, call for the use of the lancet. Increased vascular action, and this you should always bear in mind,

is not in itself a proof of an inflammatory diathesis in fever, but rather one of a set of symptoms produced by the same morbid cause. The heat of skin and rapidity of pulse are, just like the debility, products of the same morbid cause, and not the results of inflammation. You should also recollect that in fever, as well as in other diseases in which the nervous system is greatly deranged, the pulse is not unfrequently a very deceptive guide. In many cases of fever, where the patient happens to be of an irritable habit, the pulse exhibits a degree of thrill and apparent hardness, which might lead an inexperienced or inobservant practitioner into serious errors. I do not mean to say that an inexperienced finger will not be able to distinguish a pulse of this kind from one of genuine hardness, but I know that many persons have been misled by it, and I warn you against the danger.

"Again, never use the lancet when there is any, even the slightest, appearance of maculæ, no matter how intense the headach, heat of skin, or signs of general vascular action, may be. I have seen some cases in which the lancet was used during the presence of maculæ, and I have seen its employment followed by the most lamentable consequences. You should, therefore, never omit to examine the skin, for circumstances might occur which would authorize a moderate use of the lancet, provided there was no sign of maculæ present. Formerly, persons were very much in the habit of employing arteriotomy when the headach and delirium were violent, regardless of the period or stage of fever; and nothing was more common than to see a physician ordering the temporal artery to be opened on the eighth, ninth, or even tenth day. This was very much the practice during the time when the doctrine of typhus being the result of inflammation of the brain prevailed in this country and England, and a very unsuccessful practice it was. You perceive we seldom have recourse to arteriotomy here; it may be occasionally necessary, and when it is, we employ it; but as a general practice it does not appear entitled to any merit, nor can we give it our recommendation."—pp. 113, 114.

In these observations we cordially agree, and only wish that Dr. Graves had still further limited the employment of this means in typhus. Indeed, the practice of bleeding in the fever of this country is the source of great mischief; it is a practice which may possibly arrest the disease, though it has never fallen to our lot to see such an occurrence; but, if it does not do so, it places the patient in a still more unfavourable position. Many of the most dangerous, slow, and complicated cases met with in hospital are those in which bleeding has been performed within the first few days of the disease. To bleed and violently purge a fever patient is decidedly the very worst preparation that can be conceived for a successful struggle with the disease. The practice, too, is seldom adopted from judgment or experience, but in consequence of the defective medical education, which so many of our surgical students receive. If hot skin and a throb-

bing pulse are to them unequivocal signs of inflammation or inflammatory action—one of those meaningless terms which pass current with teacher and pupil. To practitioners, thus educated, many of whom have never even been within the walls of a fever hospital, pain of the head, intolerance of light, and delirium, are signs of cerebral inflammation, hurried breathing and sighing, pneumonia, and vomiting, swelling and tenderness of the belly and gastritis; and so they bleed, ignorant alike of the nature of the general disease, or its local symptoms—ignorant of the law of periodicity—of the conditions of debility—and, above all, ignorant of the leading or master fact, that symptoms, which are pathognomonic of local disease, where there is no typhus, nearly, if not altogether, lose their value, pending the continuance of this peculiar state. With respect to arteriotomy, we find it seldom practised now in Ireland; the followers of Clutterbuck are now not numerous, and have fallen away from the bolder practice of arteriotomy to the less striking but often equally dangerous system of repeated leeching the head. In the removal of delirium occurring in the advanced stages of fever, we have occasionally witnessed the success of this practice, accompanied, it is true, by the untoward event of the death of the patient, while the leeches still adhered to the temples.

Another routine treatment, and one founded on the same set of errors, is the employment of mercury. Let us hear the Author:

"I shall close this lecture with a few observations on the use of mercury in fever, and this will include all I have to say at present on the remedies most generally employed in the treatment of typhus. Are we to have recourse to mercury, or not, in typhus? I do not allude here to its use as an aperient, but when called to treat a case of fever, are you to proceed at once to bring the patient's system under the influence of mercury? Are you, in addition to the other measures usually adopted in the treatment of fever, to go on with the administration of mercury until you affect the mouth, and bring on salivation? This was the practice in my earlier days, and great confidence was placed in it by the majority of practitioners. It has been also very extensively recommended by army and navy surgeons, in the treatment of tropical fevers, but I must confess that I am not at all inclined to adopt this practice, and that I have seen abundant reasons why I should neither employ nor recommend it. In the first place, we have observed in our wards that patients with other diseases have frequently caught fever from exposure to infection, at a time when they were fully under the influence of mercury. In the next place, we have observed that persons who were thus attacked with fever while in a state of salivation did not escape better than others, and that in them the disease ran its full course, aggravated rather than diminished in its danger by the pre-existing mercurialisa-

tion. These facts I have frequently seen verified in hospital and private practice. You perceive, then, that mercurialisation neither protects a man from the contagion of typhus, nor does it produce a favourable modification in its type or progress. Again, I have repeatedly witnessed the daily and continued exhibition of mercury in fever, and I cannot recollect a single case in which it appeared to check the disease, moderate its symptoms, or bring about a favourable crisis. I am aware, that in entering my protest against this practice, I dissent from a very considerable body of my brethren, who, from the beginning to the end of fever, never cease in their attempts to bring the patient's system under the influence of mercury. I am convinced, that in the cases in which recovery is stated to have followed this practice, the *post hoc* has been mistaken for the *propter hoc*. Besides, fever is one of those affections in which you will find it extremely difficult, and often impossible, to bring the system fully under the influence of mercury. There are certain states of the system which prevent altogether the full operation of mercury, and bad typhus is one of these states. Where fever has laid deep hold of the constitution, you cannot affect it with mercury. When a patient recovers who has been mercurialised during the course of fever, he does not recover because his system came under the influence of mercury, but he comes under the influence of mercury because he recovers from the fever. Add to this, that mercury is a remedy which requires a peculiar regimen, and that it is very apt to engross the practitioner's attention, and prevent him from the exhibition of remedies which are more directly indicated, and in reality more useful. These considerations, and others, have convinced me that the exhibition of mercury in fever, with the view of touching the gums, is injudicious and unnecessary. There are, however, cases in which you will be compelled to have recourse to mercury, whatever the stage or type of the fever may be. Whenever inflammation of some internal organ—as, for instance, of the lungs—arises during the progress of fever, you must employ mercury at once; and cases of pneumonia, which would have proved fatal, have, on numberless occasions, been treated successfully by mercurialisation. But under ordinary circumstances, and where there is no indication similar to that which I have just pointed out, I do not see any advantage to be derived from the use of mercury. I am not, therefore, in the habit of employing mercury in fever. Sometimes I use calomel as an aperient, and I frequently prescribe small doses of hydrargyrum cum cretâ, with the view of gently stimulating the liver, and preventing the tendency to congestion of the intestinal canal; but farther than this I am not in the habit of going; and I never, except in cases of pneumonia, or inflammation of some internal organ, attempt to bring the patient's system under the influence of mercury during the course of typhus."—pp. 118, 119.

We come now to consider one of the most important additions to practical medicine of modern times—namely, the exhibition of the tartrate of antimony, with opium, in the advanced

stages of the worst nervous fevers; a practice which, whether we consider the extent of the induction which has led to its use, or the sound pathological knowledge and diagnostic tact which have marked its adoption by the Author, entitle him to the gratitude of every British practitioner. After speaking of the use of tartar emetic in some cases of sthenic delirium, Dr. Graves observes:

"In the two preceding cases I was guided by ordinary principles, recognized by all physicians, and according to which the exhibition of tartar emetic is recommended in fever whenever there is undoubted evidence of determination of blood to the head, producing headach, loss of sleep, and delirium. In the cases which follow, tartar emetic was exhibited at a period of fever, and under circumstances that were, with respect to the exhibition of this remedy, not less novel than important. The principles which led me to this practice have long been established, but, nevertheless, the practice is entirely new, and (I say it with pride for it has already been the means of saving many valuable lives) it is entirely my own.

"Shortly after the commencement of our present session, Mr. Cookson, a pupil at this hospital, and remarkable for his diligent attention to clinical pursuits, caught fever while attending our wards, in which many cases of the present epidemic were then under treatment. His fever was of an insidious nature, not characterized by any prominent symptom, not exhibiting any local disease to combat, or any tendency to crisis. For the first seven or eight days, with the exception of headach, which was much relieved by leeching, he seemed to be going on very well; his skin was not remarkably hot; he had no great thirst, nausea, or abdominal tenderness; his pulse was only eighty-five; and he had sweating, which was followed by some relief. About the eighth or ninth day the pulse rose, and he began to exhibit symptoms of an hysteric character. Now, in every case of fever, where symptoms resembling those of hysteria come on, you should be apprehensive of danger. I do not recollect having ever met with a single case of this kind which did not terminate in nervous symptoms of the most formidable nature. I prescribed at the time the usual antihysteric medicines, but without any hope of doing good, knowing that these symptoms were only precursory to something worse. I also, as a precautionary measure, had leeches applied to his head. The fever went on, the headach became more intense, he grew nervous and sleepless, and fell into a state of great debility. On the fourteenth day of fever his tongue was black and parched, his belly tympanitic; he was passing every thing under him unconsciously; he had been raving for the last four days, constantly attempting to get out of bed, and had not slept a single hour for five days and nights. Dr. Stokes, with his usual kindness, gave me the benefit of his advice and assistance at this stage of Mr. Cookson's illness, and we tried every remedy which experience could suggest. Blisters were applied to the nape of the neck, the head was kept cool by refrigerant lotions, the state of the belly attended to, and, as we perceived

that the absence of sleep was a most prominent and distressing symptom, we were induced to venture on the cautious use of opium. It was first given in the form of hydrarg. c. cretâ, with Dover's powder, with the view of relieving the abdominal symptoms as well as procuring sleep. This failing in producing the desired effect, we gave opium in the form of enema, knowing its great power in the delirium which follows wounds and other injuries. This was equally unsuccessful with the former. He still was perfectly sleepless. We came again in the evening, and as a last resource, prescribed a full dose of black drop, and left him with the conviction that if this failed he had no chance of life. On visiting him next morning at an early hour, we were highly mortified to find that our prescription had been completely unsuccessful; he had been more restless and delirious than ever. Here was the state in which we found him on entering his chamber at eight o'clock in the morning of the fifteenth day of his fever. He had universal tremors and subsultus tendinum, his eye was suffused and restless, he had been lying for some days entirely on his back, his tongue was dry and black, his belly tympanitic, his pulse 140, quick and thready, his delirium was chiefly exhibited in short broken sentences and in a subdued tone of voice; and it was now eight days and nights since he had slept. Here arose a question of great practical importance. How was the nervous agitation to be calmed and sleep produced? Blisters to the nape of the neck, cold applications, and purgatives had failed; opium in various forms had been tried without the slightest benefit; if sleep were not speedily obtained he was lost. At this emergency a mode of giving opium occurred to me which I had never thought of before. Recollect what his symptoms were at this period: quick, failing pulse, black, dry, tremulous tongue, great tympanitis, excessive prostration of strength, subultus tendinum, extreme nervous agitation, constant muttering, low delirium, and total sleeplessness. I said to Dr. Stokes that I wished to try what effects might result from a combination of tartar emetic and opium; I mentioned that I had given it in cases of delirium tremens with remarkable success, and thought it worthy of trial under the circumstances then present. Dr. Stokes stated in reply, that he knew nothing with respect to such a combination as adapted to the case in question, that he had no experience to guide him, but that he would yield to my suggestion. We therefore prescribed a combination of tartar emetic and laudanum in the following form, which is that in which I generally employ the remedies in the treatment of delirium tremens. ℞. Antimonii tartarizati grana quatuor, tinct opii drachmam, misturæ camphoræ, ℥viij. Of this mixture, a tablespoonful to be taken every second hour. The success of this was almost magical. It is true that it vomited him; after taking the second dose he threw up a large quantity of bile, but it did him no harm. After the third or fourth dose he fell asleep, and awoke calm and refreshed; he began to improve rapidly, and soon recovered."—141–143.

A great number of illustrative cases are given by the Author, accompanied by important remarks. It is somewhat difficult to

convey in words a proper idea of the state which indicates this treatment; particularly, if we have to instruct those who have no real familiarity with fever at the bedside. But it may be described to be a state generally met with in the advanced stages of bad nervous fevers, and more particularly in those of the upper classes of society—a state in which many symptoms of extreme nervous excitement are met with, such as subsultus, watchfulness, muttering, delirium ferox, or even convulsions, and all this without cerebral congestion or inflammation; although, in the earlier periods of the same case, these very conditions may have existed. This is the condition so constantly maltreated by the exclusively antiphlogistic school.

But even a certain amount of congestion does not contra-indicate the remedy. In such cases, the tartar emetic is increased to the amount of four grains in the eight ounces, while the laudanum should not exceed half a drachm; but, where the nervous symptoms predominate, the laudanum may amount to one drachm, and the tartar emetic to two grains. No general rule, however, can be laid down; and the practitioner must, in all cases, watch the effect of the medicine from hour to hour, until he ascertains whether it agrees with the patient or not.

"Where a life is at stake, you must spare no pains, and must not reject a remedy, because its power is rendered an instrument of good or evil, accordingly as it is administered carefully or otherwise."

This practice, like many other improvements, has been misunderstood, cavilled at, and its originality questioned, when its adoption became inevitable.

"Some there are who will take occasion to remark that I can have no claim to originality on this occasion. But all who have watched my practice in the hospital, nay, all who have taken the trouble of reading my lectures and successive publications on this subject, will at once acknowledge that I proceeded on this path of investigation with no other guide but an analogy derived from an observation of the effects of tartar emetic and opium in delirium tremens, a disease undescribed in the time of Marryatt. Every one the least conversant with the treatment of fever in private and in hospital practice in Dublin, London, and Edinburgh, will allow that no one during the present century ever taught or practised the exhibition of tartar emetic at the stage of typhus fever in which I have recommended it. Not a single hint at such a treatment is given in any of the numerous contributions on the treatment of typhus, which form the valuable work edited by Dr. Barker and Dr. Cheyne. Where is there even one allusion to this practice in Armstrong, Smith, Tweedie? And what is said of it in Good, Thomas, Mackintosh, or in the Cyclopædia of the Practice of Medicine? Where is it mentioned or inculcated in the Edinburgh Medical and Surgical

Journal, or in Johnson's Medico-Chirurgical Review? No where; although the treatment of fever is often the subject of anxious discussion.

"So far suffices with regard to the novelty of the matter, for it is useless to argue with persons so stupid as to confound the practice I recommend with the well known and popular use of tartar emetic as an emetic or a diaphoretic in the commencement of febrile diseases generally. That I did not come upon this method sooner, I regret infinitely, for since its adoption, my practice in hospital and in private has been much more fortunate than formerly."

Our experience fully bears out the statements of the Author; and we have repeatedly seen cases in which opium alone failed to procure rest, yet in which the combination had the happiest effect. We had an opportunity of witnessing a most remarkable instance which lately occurred in the practice of Dr. Lees, of this city, who has kindly furnished us with notes of the case; the remedy appeared to have an almost magical effect. The patient, a gentleman of nervous temperament and high literary attainments, and suffering under his first attack of typhus, had an imperfect crisis on the fourteenth day.

His pulse had been 140; he was incoherent, looked wildly about him, and towards morning became extremely low, and said he was dying. He then broke out into profuse perspiration, had great tremor of the hands, and appeared in extreme terror. He got some stimulants, and soon fell asleep, awaking in four hours much refreshed, with his pulse having fallen to 112. On the sixteenth day he again became greatly excited. He struggled violently, his features twitching, and his pupils greatly dilated. His state now became terrible. The subsultus amounted to almost convulsion; his pulse 132, and miserable; opium and musk were given without effect. The head was shaved; but he continued as violent as ever, thrusting downwards in the bed, sobbing and screaming, and with the subsultus like tetanic shocks. Under these circumstances, the following was ordered by Dr. Lees:

℞ Tartrat. Antimonii gr. vi.
Liquoris Opii sedativi ʒi.
Misturæ Camphoræ ℥viii.

Of this mixture he got one ounce in a single draught. He fell asleep, and slept calmly for three hours, when he awoke in great terror; all the bad symptoms returned. Another ounce was administered; and soon after a third, with the same happy effect. Thus he continued to the evening of the next day, comparatively rational, and taking nourishment, when he began to look wild, got restless, and tossed himself about; his tongue was dry and glazed. Another dose was administered, which did not

produce sleep; but the patient lay quiet, passed much urine, and from this time began to recover. The gentleman is now in perfect health. And we hesitate not to say, that in our experience of typhus fever occurring in the upper ranks of society, we never witnessed a recovery so distinctly attributable to medicine.

After giving the results of Dr. Stokes's investigations on the state of the heart in typhus fever, and the conclusions to which his observations led, Dr. Graves observes, that, though the doctrines are entirely new, and to some rather fanciful, yet that he can vouch for their general accuracy. We may here recall to the memories of our readers, that the paper alluded to consists essentially in the record of a long series of accurately observed facts, and that it is not a paper of speculation. The only point of suggestion or speculation in it, relates to the nature of the softening of the heart, which is put forward more as a suggestion than a point of doctrine. What Dr. Stokes did, was to point out the means by which a certain condition of the heart—long ago recognized and described by Lænnec, Louis, and others—could be discovered during life, to show the description of case in which this condition occurred, and to establish its value, in giving an important rule in practice. But before going farther, we must quote from Dr. Graves:

"I cannot agree, however, with Dr. Stokes, in attributing the phenomena of a *debilitated* heart to a *softening* of that organ, much less to the interstitial infiltration of a peculiar secretion, analogous to that which Staberoh states he has observed on the mucous surface of the intestines in dothonenterite. On the contrary, I consider the heart, in typhus fever, to be affected with debility from the same cause which induces a debility of the voluntary muscles, and of the bladder and sphincter ani—that cause is a general prostration of nervous energy. That Dr. Stokes has seen the heart softened in the examination of subjects that had been affected with typhus fever, I have no doubt; but I would impute this condition to the effect of putrescence, a process which it is well known sets in with great rapidity in cases where death has been caused by any malignant disease. It seems difficult to conceive how the heart could contract in a case where 'the *right cavities* were softer than natural, admitting the fingers through their walls without much resistance; and in which, in the muscular structure of the left cavities, this change was much more remarkable, the weight of the finger being almost sufficient to penetrate its walls, they were so exceedingly softened; it was very easily torn, and the edges thus separated had no longer the moistened appearance, but seemed as if quite dry. The septum cordis was equally softened; there was some dark fluid blood in the right cavities.'

"But the fact cannot be denied, that in many cases of typhus the heart becomes weak, that this weakness is manifested by a de-

crease in the strength of its impulse, or in the intensity of its sounds, or a change in their relative loudness and duration—and though I have never witnessed these changes without accompanying debility of the entire muscular system, and other evidences of prostration, yet I fully agree with Dr. Stokes '*that in the diminished impulse, and in the feebleness or extinction of the first sound, we have a new, direct, and important indication for the use of wine in typhus fever,*' and one from which the junior practitioner in particular will derive the greatest assistance."

It is true that Dr. Stokes did not point out the diagnosis between a debilitated heart without softening and the same condition with softening. This he left an open question. He states in the outset, that in typhus fever two opposite conditions of the heart may be observable; in the one the impulse becomes extremely feeble, or altogether wanting, while the sounds are greatly diminished in intensity; while in the other the heart's action and sounds continue vigorous throughout the whole course of the disease. He observes farther, that these opposite states are not revealed by the state of the pulse, or the warmth of the surface, but must be determined by the application of the hand and stethoscope, and he showed that these conditions indicated certain modifications in practice, and, above all, had great importance with reference to the use of wine.

Dr. Stokes did attribute, and, we believe, does still attribute, the phenomena in question to a *debilitated and softened* heart, for the following reasons:—

I. That a softened heart had been shown to exist in many cases of typhus, by Louis and others.

II. That in the dissections made by Dr. Stokes, in cases where the peculiar physical signs existed, a softened heart was found.

III. That where the opposite signs existed the heart was not softened.

IV. That the signs of debility often occurred at an early period of fever, and when there were no evidences of the other muscles, voluntary or involuntary, being affected.

It is plain that the main questions are, whether a debilitated state of the heart is, or is not, an important element in certain cases of typhus? and secondly, whether it can be recognized with certainty during life? and thirdly, whether that recognition leads to any important indication of practice? We believe that Dr. Stokes has shown that all these things do really occur, and, in a practical point of view (so far as we know at present), it matters little whether there be an organic change or not.

But we are entirely at issue with Dr. Graves when he attributes the condition observed by Louis and Dr. Stokes to pu-

trefaction. It is not likely that the latter observer would commit the unpardonable error of mistaking putrefaction for organic change occurring during life; and it is still less probable that Louis would fall into the same mistake. The exact correspondence between the vital cardiac phenomena in the cases of recovery and those in which death took place, makes a strong case in favour of the similarity of the organic state of the heart in both sets of cases. The early appearance of the change, as observed by Louis, and of the physical signs, as recorded by Stokes, is another strong argument; and the question seems set at rest by the fact that the change of the heart is often partial, affecting the left ventricle, and that in most of the observed cases *there was no analogous condition observed in the voluntary muscles.*

Finally, as to the question of the softening being produced by a peculiar infiltration, Dr. Stokes has put this view forward more as a suggestion than as a matter proved. Changes of organs may be observed in typhus fever, inflammation, congestion, putrefaction, and softening with infiltration of a peculiar matter. We believe that the morbid condition in question cannot be referred to any of the three first states, and the whole history of the disease is reconcileable with the supposition of softening by infiltration. Analogy, too, of which Dr. Graves so often makes successful use, is in favour of this supposition. Indeed the progress of observation for some years back tends strongly to the opinion that typhus is analogous to other diseases, acute or chronic, in which a peculiar matter is formed and deposited in the tissue of organs. This is the *typhus-gebilde* of Rokitansky, a substance which we have every reason to suppose passes through transformations, and is deposited and absorbed with or without accompanying irritation, as in other instances of the production of the non-analogous compounds in the animal economy.

In the preceding notices of the Author's views of fever, we feel that we have given but an imperfect sketch of the subject as detailed in the book itself. We now enter on another portion of the book, devoted to the consideration of a number of local and constitutional affections. The chapters on syphilis contain by far the best account of the actual state of our knowledge of this disease and its treatment, with which we are acquainted. Dr. Graves gives many extracts from the latest reports on the mercurial and non-mercurial treatment in Germany; and, although by no means excluding the use of mercury in proper cases, shows with great force the lamentable consequences which still result from the repeated use of this medicine in patients, who really labour more under mercurial than syphilitic disease. We have next

the subjects of inflammation, paralysis, nervous fever, scarlatina, influenza, gout, and hepatic and splenic disease, illustrated by many new and important facts; and the latter part of the book contains the Author's researches on a variety of local diseases. We trust on a future occasion to continue our notices of this important work, so creditable to its Author, and to our country. It is no ephemeral publication, nor is it a book got up for a special purpose, but may be taken as a true exposition of *practical medicine*, as we have it up to the present day, by an experienced physician, one long distinguished in the annals of European medicine, as a man of high education and great practical attainments; and, as such, must be considered an addition to the medical literature of Ireland.

The London Journal of Botany; being a New Series of the Journal of Botany. By Sir W. J. Hooker, K. H., LL.D., F. R. A., L. S., &c. Nos. 1 to 14. H. Balliere, Regent-street, London.

Botany is a science that appears to be either studied by medical students with too exclusive an ardour, or, what is still more frequent, is too much neglected. It is true, that a knowledge of plants is not a knowledge of disease; and that many physicians, the most eminent, have been utterly ignorant of the structure, functions and classifications of the vegetable kingdom. But it is not the less certain, that our acquaintance with the laws of life is not so complete as to permit us to despise its manifestations in those examples, when it presents its simplest problems; nor is the "medical mind" so easily educated, that we are entitled to reject the best means of exercising one of its most difficultly acquired modes—that of *methodical investigation.*

Hear what Frederick Tiedemann (no mean authority) says on this subject:

"Natural history is important to the young physician, inasmuch as it exercises his intellect and judgment. They are (he continues) the same intellectual faculties which operate, whether he employs himself in determining a plant or an animal, to find its place in system; or is occupied in the diagnosis of disease by the bedside of a patient. Natural history recommends itself to the young physician, as one of the best preparatory exercises to his principal studies."

Botanists have done much for pharmacologia; witness Murray (Author of the Apparatus), De Candolle, and Barbiere; and we question if the latter, the writer of the best work extant upon therapeutics, does not owe much of his competency for the

task to his intimate acquaintance with the structure and functions of vegetables.

Viewing, as we do, the study of botany as an excellent addition to the education of the medical man, if retained subordinate to more practical pursuits, we strongly recommend to our professional brethren the periodical at the head of this notice. The name of the Editor, Sir William Hooker, is sufficient to insure the scientific and valuable nature of its contents; and when we mention that Lindley, Berkeley, Bentham, Gardiner, Watson, Asa Gray of the United States, &c., are among its principal contributors, our readers may rest assured of the talent of the staff by which he is supported.

One of the most remarkable features of this periodical is the information which it contains from all parts of the habitable globe. From his long scientific career, and the favourable circumstances in which he is now placed, as director of the gardens at Kew, Sir William Hooker has established a most extended correspondence; and accordingly we find in this Journal letters from Surinam, Australia, Southern Africa, Russia, China, and many other countries, not only replete with botanical news, but extremely interesting, as affording an insight into the peculiarities of many and far distant lands.

Thus our enterprising and enthusiastic countryman, Mr. James Drummond, in writing from King George's Sound, describes a cave in York District containing drawings similar to those described in Governor Grey's highly interesting book on Western Australia. We extract Mr. Drummond's description:

"A curious cave, called, by the natives, the Moon's House, is situated in a solid granite rock, near the left bank of the Avon river, and about two and a half miles above the residence of Mr. Hardy. This cave is remarkable for having imprinted in the living rock a circular figure, about eighteen inches in diameter, together with several mysterious prints of the human hand. The circular figure resembles what might be drawn with the tip of the fore-finger, dipped in some white colouring matter; and the circle is subdivided into small squares, by means of five perpendicular white lines, placed at rather unequal distances, and crossed again by eight lines. An indistinct outer circle appears, in some places about two inches distant from the inner one. On laying the eye to the level surface of the granite, the white lines appear rather below the level of the other parts. The whole interior of the circle, and the interstices between the white lines, are deeply stained with what appears to me to be iron ochre, but others have pronounced it blood. The prints of the human hand are of two kinds. About a foot above the circular figure that I have described, are two marks, each exactly resembling such an impression as would be left by the hand of a full-grown native man, dipped in blood, and pressed flat on the surface of the rock, with the

fingers outspread. But the most remarkable figure is one, apparently of the same hand, which is distinctly visible as far as the elbow. This is below the circle, and, instead of appearing of the same bloody-colour as the one above, seems to be of a light grey granite, surrounded by the same rock of a red hue. Three fingers of another hand are discernible in a small hollow of the rock; but these are not easily discoverable, being not very different in tint from the surrounding rock; and several indistinct impressions of what may be called "the bloody hand," exist to the right and left of the circular figure. No difference is perceptible in the structure of the rocks where these marks appear, nor could I detect that the surface was either elevated or depressed. The stone itself is hard as flint; and when trying to chip it with the best tempered chisel I could procure, the fire flew at every stroke, and scarcely any impression was made. The more the figures are scrubbed with sand and water, the plainer do they appear. The tradition of the natives is, that the moon made these marks, when he existed here in the shape of a black fellow, and I regret that I cannot give any more satisfactory account of them."

The foregoing description corresponds, in the most striking manner, with the account of the caves discovered by Governor Grey, near Port George IV., in the north-western part of Australia; but what makes the similarity most remarkable, is, that the places where these drawings were found, are no less than seventeen degrees of latitude from each other!

In another letter from Swan River, Mr. Drummond gives particulars with respect to the action of a poisonous plant, which had been described by him in former communications.

"Our readers will, perhaps, be surprised" (says the editor) "to learn, that the heaviest drawback to the prosperity of the Swan River colony, consists, not so much in storms, drought, failure of crops, and the various causes which attend the emigrant's earlier operations, and teach him, by painful experience, the disadvantages of his adopted land, but by the destruction among the flocks and herds that a deleterious plant is apt to occasion. At one time, before instituting the rigid experiments which follow, Mr. Drummond attributed the mischief to a species of *Lobelia*, a genus of acknowledged acrid properties; and it is to be feared that more than one vegetable shares in producing the injurious effects. The finest and strongest animals are the first to perish: breathing seems difficult, they stagger, fall, and die; while the evil effects which attend the eating of their flesh augments the calamity to the owners. The specimens to which Mr. Drummond refers, and which he has sent home, constitute a remarkable exception from the usual qualities of the natural order *Leguminosæ*."

Of all the bold and ardent naturalists we have ever read or heard of, Dr. Hostmann, of Surinam, appears to be the most enthusiastic and self-abandoned. This gentleman, a frequent

contributor to the Journal, has abandoned the practice of his profession, to follow his favourite pursuits. For this purpose he has accepted the situation of Government resident among the ferocious bush negroes, at a miserable stipend; to live, as he himself expresses it, secluded from all civilized society—to make his abode among sombre and interminable forests, the secure haunts of wild beasts, and still more ferocious men, and to find in the society of trees, and flowers, and harmless animals, a compensation for all privations.

Some of the adventures of this intrepid man are equal to any thing ever read of in De Foe's romances. The climate of Surinam being constantly humid, there is not much comfort lost by travelling in the rainy season; and as this period of the year presents some peculiar advantages for botanizing, Dr. Hostmann and another gentleman, assisted by the precarious help of the bush negroes, dared innumerable dangers during a four months' excursion from Paramaribo to Wana Creek. But we will permit Dr. Hostmann to relate some of his own adventures. He and his companions encountered one of those hideous snakes, known by the name of Jarrakooka (*Trigonocephalus rhombiatus*), which, having been roused from his dark abode, nearly killed one of the men; for there is no difference in this case between wounding and killing.

"The mere sight of this animal is sufficient to inspire dread, and to apprise the most careless wanderer of what he has to expect: a flat cordate head, fixed to a very slender neck, large protruding glittering eyes, with still larger cavities below them; the body inflated, and terminating in a spine, and covered with carinated scales, horny to the touch; these form an aspect which cannot be contemplated without making one feel sick. Nothing can be compared to the virulence of the poison ejected from the fangs in the jaws of this monster, except it be the astonishing rapidity with which it takes effect. The soundest frame is immediately affected, excruciating pain ensuing as soon as the wound is inflicted, followed by an effusion of *white blood* from all the apertures of the body, the muscular parts above the injured part are instantaneously destroyed by gangrene, and these awful symptoms suddenly terminate in death, the event being announced by putrefaction; but though the offensive exhalations never fail to attract a number of vultures, even the most voracious kind of this bird (cathartes aura) refuses to touch the putrid corpse. The snake, whose bite occasions these truly awful effects, is generally six feet long, of a dirty yellowish colour, with dark rhomboidal spots."

We shall quote a few more passages from Dr. Hostmann's letters, abounding as they do in stirring incidents:

"There is nothing interesting to the naturalist at the Port Armina, unless it be the hundreds of thousands of *bats*, which may be seen

clinging under the roofs of the thatched dwellings, their whistling noise occasionally breaking the monotony of the day, and increasing with the advance of evening. As soon as the declining sun has sent forth his last gleam, off they all start, and, like a dark cloud, take the direction of the east, when immediately a small *black falcon* (*le Chasseur des Chauvesouris*, Buffon) pounces among them, and never fails to capture a few. This *bat*, a small animal, is that species which sucks the blood of all warm-blooded animals, and preferably that of the human race; and I must declare, having myself submitted to the experiment, that the way in which the creature sets to work is highly interesting. Guided by instinct, it selects the most remote part of the body, where there is least risk of being caught. I offered my bare feet to the attack of these bats, and soon had the satisfaction of seeing two of them busily engaged, one on each great toe. So gently did they lay hold, vibrating the air incessantly the while with their expanded wings, that I could not ascertain the precise moment of the bite. In a few minutes they appeared to have taken sufficient, and dropped off to the ground, when, to my great astonishment, I found the wounds to be pretty large, and of a triangular form △."

We cannot forbear making room for the following description of an Indian settlement:

"The departing sun gilded the shore of Cayenne, when we perceived, on the opposite side, an Indian settlement which seemed hospitably to bid us look thither for shelter, and on approaching its copper-coloured patriarchal inhabitants, their kindness did not belie the promise of their simple huts. These people belonged to the Gallina tribe, and their chief immediately ordered his men to aid us in passing a shoal, behind which our little fleet might find safe anchorage. An entire hut was placed at our disposal, and these good-natured aborigines, far from asking any present, offered us, with the utmost frankness, their little gifts. The chief set the example, with easy and unembarrassed manners, just as if it were a thing of course, he brought us a fowl, and the women each gave a cake of manioc, neither of which was at all despicable food. With equal frankness, these people requested some rum, and though the men seemed to relish this nauseous beverage, I am sorry to say, their partners far exceeded them, their passion for spirits being perfectly insatiable. Soon the liquor did its wonted work, and the aged chief, with savage eloquence, began relating his military exploits, just as if the affair had occurred yesterday, whereas, he was referring to the conflict between the free inhabitants and revolted slaves, upwards of eighty years ago! He must have been nearly one hundred years old to have taken part in this battle, and yet there was not a single white hair to be seen on his strong-looking skull, and he lived with three wives, the youngest of whom had an infant at her breast, and he looked as if he might last for half a century more."

We recommend the London Journal of Botany most strongly to all those that feel an interest in this delightful science; and the extracts we have quoted show that it contains also much that may interest the general reader.

SCIENTIFIC INTELLIGENCE.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.

Session 1841-1842.

Fifth Meeting, December, 18, 1841.

Dr. Montgomery in the Chair.

1. *Chronic Rheumatic Arthritis of the Temporo-Maxillary Articulation.*—Mr. Smith presented a series of specimens (eleven in number) illustrative of the alterations produced in the parts entering into the composition of the articulation of the lower jaw, by chronic rheumatism. In seven of them, the disease engaged the articulation upon each side; and in four, the subjects were edentulous. Previous to describing each specimen, Mr. Smith made some general observations upon the disease. He remarked, that in the majority of instances, it attacked those of advanced age, and was double, while the analogous disease of the hip-joint was usually confined to the articulation of one side. When it attacks those of middle age, it is generally more rapid in its progress, accompanied by more severe pain, and is more liable to implicate the neck of the condyle and ramus of the jaw. In some cases, a bony tumour can be distinctly felt beneath the zygoma, immediately in front of the external meatus, and constituted by the enlarged condyle; the lymphatic glands, on the surface of the parotid, and behind the ear, are also, in these cases, prone to enlargement. The pain, which accompanies the disease, is not usually severe; but is more or less constant, and is influenced by the state of the weather. The face is generally distorted; the nature of the distortion varying according as one or both articulations are affected. When it is confined to that of one side, and has existed for a considerable period, the mouth becomes crooked, the affected side of the jaw being drawn forwards, and towards the opposite side, so that the teeth of the lower jaw, upon the sound side, project beyond those of the superior maxilla; but when the disease is symmetrical, the entire of the lower jaw is drawn forwards, and the chin projects, just as it does (though from a different cause) in the edentulous subject. Mr. Smith (having alluded to

the close resemblance between this affection and chronic rheumatic arthritis in other articulations), next entered into a minute detail of the anatomical characters of the disease. He described the articular surfaces of the glenoid cavity and condyle, as being destitute of investing cartilage, and presenting an irregular and scabrous aspect; the appearances, of course, varying according as the disease was more or less advanced: in some cases, the glenoid cavity is increased in depth; in others, it is rather shallower than natural; sometimes circular, sometimes oval, in form. It is, in many instances, where the disease has been of long duration, increased as to its circumference; this enlargement being accomplishsd at the expense of the horizontal and transverse roots of the zygomatic arch, more especially of the latter, which, in all cases, is to a greater or less extent absorbed. It is upon the destruction of this transverse root, or articular eminence, as it has been termed, the distortion of the countenance depends; for, when its removal by absorption is to a certain extent effected, the external pterygoid muscle then draws the jaw forward, and to the opposite side, where but one articulation is diseased, and the muscles of both sides act in drawing it directly forwards when the destruction of the articular eminence is symmetrical; the extension of the disease inwards, towards the middle line of the base of the skull, is limited by the spine of the sphenoid bone, and the spheno-temporal suture, and posteriorly it ceases at the Glascrian fissure, the non-articulating portion of the glenoid cavity never being implicated in the morbid action; the alterations of the condyle correspond pretty accurately to those of the glenoid cavity; sometimes it is enormously hypertrophied, its upper surface being flattened, and enlarged in all its diameters, while in other cases it assumes a conical form, and is always rough and destitute of cartilage. Mr. Smith remarked that the changes, which the bones suffered as to form, were as numerous and as varied as in the analagous affection of the hip-joint. With respect to the state of the soft parts connected with the articulation, he stated, that in the progress of the disease, the interarticular cartilage disappeared. He had not, as yet, found foreign bodies in the articulation; and in only one specimen, anything like porcellanous deposit. Mr. Smith exhibited drawings and casts illustrative of the deformity of the countenance in this disease; and, in conclusion, contrasted it with that which accompanies the congenital luxation of the lower jaw—a specimen of which he had exhibited at a former meeting of the Society.*

2. *Cirrhosis of the Liver.*—Dr. Law produced the recent specimen in this case, taken from a man, æt. 50, labouring under ascites. The heart could be felt pulsating under the left clavicle, and paracentesis was performed, which was followed by peritoneal inflammation. Serum, with flocculi of lymph, was found in the abdomen, and the convex surface of the liver was adherent to the diaphragm. The liver was in the state of cirrhosis. Dr. Green at a former meeting had

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* See *Dublin Journal*, vol. xxi. page 225.

detailed the various opinions on the pathology of this affection. It was now known that Laennec's opinion was incorrect. The irregularly rounded bodies are the acini surrounded with a fibrous contractile tissue. On this change in the organ dropsy ensues. This lesion is not peculiar to the liver; it occurs in other organs, producing analogous changes. Wherever it occurs it affects the common parenchymatous tissue. It has been observed in the kidney. In the lungs it produces the change which Dr. Corrigan had described under the name of dilatation of the bronchial cells. It brings the liver to the state of the organ of some of the lower classes of animals, as the cephalopoda.

3. *Cirrhosis of the Lung.*—Dr. Law exhibited two specimens of this disease; one was from a man, æt. 50, who had laboured under dyspnœa for ten months before his admission into the hospital. The left side of the thorax, both anteriorly and posteriorly, sounded dull on percussion, and a muco-crepitating râle was distinctly audible. After some time the right lung became affected in the situation of the mammary region. There was hæmoptisis; and a crepitus was evident in the right lung. When the body was examined, the left lung was found to be covered with a very dense false membrane, especially at its inferior lobe. The parenchyma was very dense, and some osseous particles could be felt in the pulmonary tissue. The right lung was free from disease superiorly, but there were tubercles in the middle lobe, and in the inferior dense structure of the parenchyma.

The other specimen was from a boy, æt. 10. There was empyema, but circumscribed by adhesions, so that only a portion of the lung was exposed to its effects.

Dr. Law observed, that he had already mentioned Laennec's mistaken views of the pathology of this affection. He had himself so far back as 1830 connected it with hæmatemesis, and with the circumstances of *diminished size with increased specific gravity* of the organs affected by it. He might allude also to the progress made, in its investigation by Cruveilhier and Carswell, and to Dr. Corrigan's success in explaining the enlargement of the bronchial cells, which had already been bronght under the notice of the Society.

4. *Cysts with puriform Contents in the Heart. Bright's Kidney, &c.*—Mr. Ferrall said, the recent specimens which he then produced were taken from the body of a boy, aged 16, who had died in St. Vincent's Hospital affected with disease both of the heart and of the kidney. The urine was pale, albuminous, and of specific gravity 1010. There was increased dulness in the region of the heart, with strong pulsation and soufflet. All the ordinary symptoms of both cardiac and renal disease were present. The kidney was injected, and exhibited Bright's disease, but there was less appearance of foreign deposit than usual. In the heart, the mitral valves were thickened, and in some parts cribriform. In the cavities of the heart were found several cysts containing a puriform matter; several of these were in the right ventricle and left auricle. They were entangled among the carneæ columnæ. The fluid contained in these

cysts certainly resembled pus, but Gulliver had asserted that it is distinct from pus. Mr. F. had on a former occasion communicated to the Society cases in which similar cysts were found, and which for reasons that he then stated, he concluded were examples of softening of the fibrin of the blood.

5. *Chronic Ulcer of the Stomach.*—Dr. Lees exhibited a recent specimen of a chronic ulcer of the stomach, taken from the body of a lunatic, who died during the week, of phthisis; there had been no symptom indicating any affection of the stomach. The ulcer was evidently a chronic one, it was oval with a well defined edge, and its longest diameter was about an inch. A bit of bone which was capable of lying in the ulcer, was found in the stomach, but evidently quite recently introduced, so that it could not be considered as connected with the formation of the ulcer; the ulcer was seated at the lesser curve of the stomach.

6. *Permanent Patency of the Aortic Valves.*—Dr. Corrigan said the specimens he then produced were from the body of a boy, æt. 15, who was admitted into the Whitworth Hospital on the 2nd of December with all the symptoms of angina. There was also a double bruit audible, and visible pulsation in the neck. There was strong impulse of the heart, which was evidently hypertrophied. The right ventricle lay under the first bone of the sternum, and the apex pointed into the axilla. This situation of the ventricle is a circumstance that often leads to doubt in the diagnosis. The account given by the patient was, that about four months previous to admission he began to feel distress in the epigastrium, and difficulty of breathing after meals. Soon afterwards he was affected by violent palpitations at night and then swelling of the feet supervened. His death was sudden. Dr. Corrigan pointed out the condition of the aorta, which during life had permitted the blood to flow back into the ventricle, and showed the recent deposition of lymph on the artery, within the pericardium.

7. *Duct of the Gall Bladder communicating with the Stomach; Cancerous Tubercles about the Pylorus.*—Dr. Corrigan produced the recent specimens in this case. The subject, a man named Bond, died last week in the Whitworth Hospital. He considered himself to have been well up to about three months ago, when he became affected with pain in the epigastrium, and headach. These continued up to his admission into hospital, by which time he had become very much emaciated. On the 24th of November he appeared jaundiced, but not of a deep colour; the tint was that usually seen in organic disease of the liver. The pulse was slow, beating only 45 or 50 in the minute. He continued in this condition till the third of December, when he suddenly became of a deep orange colour, previous to which the pain in the epigastrium had been very severe, and was accompanied by a dragging sensation whenever he turned in the bed. On the 10th a sudden vomiting of blood came on, after which he gradually sunk. When the body was inspected, the liver was found greatly enlarged, it was brittle in consistence, and it presented the appearance designated the nutmeg liver. The stomach was very soft.

The duodenum, the gall bladder, and ducts were matted together by lymph, and the duct of the gall bladder communicated with the interior surface of the stomach. Near the pylorus were several small cancerous tumours containing a cream-like fluid in their centre. Some of these were still covered over by the mucous membranes, others had ulcerated, and were probably the occasion of the hæmatemesis. One of these tumours was found on the concave surface of the liver.

8. *Atrophy of the Uterus; Amenorrhœa.*—Dr. Montgomery made some remarks on the functions and pathology of the uterus. He said that it had frequently been observed, that the catamenia were absent in cases where there was organic diseases of the lungs, liver, or heart. He had found, that in these cases there is not only suspension of the function, but a diminution of the uterus itself. Of this there was an instance in the case he had now to communicate. The subject was a woman who died in Sir P. Dun's Hospital, affected with phthisis and disease of the heart. There was amenorrhœa. The aortic valves were diseased, and the uterus, as the Society would perceive, was exceedingly small, and was besides almost membranous. The mucous membrane of the os uteri, and upper part of the vagina, were in a state of of inflammation. It was evident that in such cases where the amenorrhœa depended on the physical incapacity of the organ, emmenagogue medicines would not only be useless, but might be positively injurious. Dr. Montgomery concluded by observing that from what he had just detailed, practitioners would perceive the necessity of examining the size of the uterus in cases of amenorrhœa, and this, he thought, could be best ascertained by the finger introduced into the rectum.

Sixth Meeting, January 1, 1843.

Mr. Adams in the Chair.

1. *Peculiar Deposition of Lymph on the Mucous Membrane of the Large Intestines in Children.*—Doctor Lees laid before the Society several specimens of diseased intestines, from children who had died in the South Union Hospital. The first of these were from a child eight months old, who had suffered repeated attacks of diarrhœa. The rectum, the colon, and the lower portion of the ileum were pale, and thickly coated with very adhesive lymph deposited on the mucous surface, through the entire extent of these parts of the intestinal tube.

The next specimens were from a child two years old, who had been similarly affected with the preceding. The mucous coat of the large intestines was very vascular, and was covered by a deposition of very adherent lymph. In both this and the preceding case, the Peyerian glands were enlarged, and some of them ulcerated. Dr. Lees considered that this state of Peyer's glands confirmed the observations of Dr. Hodgkin, and was opposed to those French pathologists who limited the occurrence of this condition to typhus and epidemic cholera. Dr. Hennis Green, whose acquaintance with the dis-

eases of infants is most extensive, had remarked, on seeing the present specimens, that this form of disease in the large intestines is of very rare occurrence.

There were specimens also of the same condition of the intestines, from a child of four months old, in which there was also found a tubercle in the lower part of the ileum.

The last of Dr. Lees' specimens were from a child of twelve months old, who had died of tubercular deposition. One tubercle was found in the serous covering of the heart, and another in the anterior mediastinum. The lungs and the spleen were full of tubercles, and there were the same appearances of disease in the intestines as in the preceding cases.

2. *Pericarditis.*—Doctor Graves exhibited a specimen of pericarditis, taken from a man aged 23, who had died in the Meath Hospital, into which he was admitted, labouring under dropsy, and in a state of extreme debility. The sounds of the heart were abnormal. The first was a long *bruit de serre ;* the second a musical sound; both were loud and prolonged, and were heard extensively over the base of the heart, and especially under the clavicles, but were louder under the right. The sounds were distinct, and were not those of rubbing. There was no *fremissement* anteriorly. The pulse was slow. These symptoms having been observed, the question arose did they depend on disease of the valves? Dr. Graves ascribed them to pericarditis, forming his diagnosis on the extent and loudness of the sounds, and the evident proximity of their source to the parietes of the chest; the absence of thrill in the arteries of the neck; and there being none of that leaping of the arteries which Dr. Corrigan has shown to accompany patency of the aortic valves (an observation which Dr. Budd has ascribed to Dr. Hope). The slowness of the pulse was a character which had been already observed in five or six cases of pericarditis, one of which is recorded in the *London Medical Gazette* of 24th December, 1841. In the present case there was a double saw sound on the day following the first examination. The patient died soon after, and on dissection it was found that there was no fluid in the pericardium, but there were numerous adhesions; the lymph was most abundantly effused over the right auricle. The valves were completely healthy. Dr. Graves considered this case important, as aiding to discriminate between pericarditis and disease of the valves. The cause of sounds so loud as were heard in this case was worthy of inquiry; it probably depended on the tenderness of the heart and pericardium, produced by the inflammation of the serous membrane; the action of the heart was at the same time strong, and thus the sounds increased proportionally in loudness. He had observed that parts of the body, which are not naturally sonorous, yet become so, when they are rendered very tense by disease.

3. *Chronic Rheumatic Arthritis of the Knee Joints.*—Mr. Adams produced the recent parts, which he observed had been procured by Mr. Robert Smith, from the body of a man who died on the preceding day, who had, at a former period, been treated for rheumatism and gastritis of a rheumatic character, in the Richmond Hos-

pital. The society would observe that there had been complete destruction of the cartilages, and that there were many loose cartilaginous bodies within the joint. In one knee, one of these bodies, which was nearly ossified, was still attached to the inner condyle, by a pedicle or membranous band. Another was attached to the semilunar cartilage. Mr. Adams thought the appearances in this case were contradictory of the commonly received opinion of the origin of these bodies. They probably originate under the synovial membrane, and protrude, like polypi, into the cavity of the joint, at first connected by a pedicle, and finally detached.

The subject of this case was a poor man, who had been much exposed to cold and hardship. Both knees were affected with very severe pain in walking, or whenever the cartilages were pressed together. The right knee was very much swelled. During his illness he was frequently attacked with pain in the stomach, of a rheumatic character, with vomiting.

4. *Disease of the Prostate Gland, Prostatic Calculi in the Bladder, &c.*—Mr. Smith said, that the preparation he was about to exhibit was taken from the body of a man æt. 60, who had suffered from severe and repeated attacks of gonorrhœa; the last occurred two years before his death, and was followed by great irritability of the neck of the bladder, with diminution of the size of the stream of urine; the quantity passed at each evacuation was much less than natural. About ten months before his admission into hospital, he first observed that small round calculi came away with the urine, and passed through the catheter every time the instrument was passed; at the time of his admission into the hospital, the prominent symptoms in his case were, constant desire to pass water, severe straining, pain in the vesical region and along the urethra, the urine was dark and fœtid, he could only void it through the catheter, and every time the instrument was introduced, numbers of small calculi escaped through it, rattling against the bottom of the urinal; his pulse was 100. Five days after his admission stillicidium urinæ occurred, together with ardor urinæ and severe vomiting; these symptoms were followed by sinking of the pulse, diminution of the temperature of the surface of the body, and depression of the countenance; the tongue became dry and brown; then singultus set in, and he died five days after the occurrence of the stillicidium.

Autopsia.—Enlargement of the lateral and middle lobes of the prostate gland; a vast number of calculi existed in the bladder; they were white and round, and varying in size from that of a grain of mustard seed to that of a pea, one was as large as a small marble, the urethra was nearly filled by them, a great number were contained in pouches formed in the substance of the prostate. Independent of those voided with the urine during life, 1032 of these calculi were found; the bladder was somewhat larger than natural, its mucous membrane was of a slate colour, mottled with red; the ureters were dilated; the lining membrane of the pelvis and calyces of the kidneys very vascular, and the surface of these organs presented a granular appearance. —*Museum, Richmond Hospital.*

Seventh Meeting, 8th of January, 1842.

Doctor Graves in the Chair.

1. *Abcess between Dura Mater and Arachnoid; Paralysis of right and left Sides successively; softening of Optic Nerve with Inflammation of Eye and Loss of Vision.*—Mr. Hamilton presented the recent specimen, and observed, that in the case of disease of the brain, which he was then communicating, it would be difficult to account for the symptoms by the pathological phenomena observed in the examination after death. The subject was a lunatic, who, about a year back, gradually lost the use of the right arm, while, at the same time, a slow inflammation, attended with pain, destroyed the power of vision in the right eye. In this condition the patient remained up to a week before death, when he suddenly fell down insensible, and on being raised it was found that the left side had become paralysed. The skull, as the Society could perceive, was of more than usual thickness, and its inner surface was in many places very rough. The dura mater had the natural healthy appearance, except towards the surface of the brain posteriorly, where it was thickened and adherent to the arachnoid; there was an abscess of very tenacious pus between the dura mater and the arachnoid, towards the left of the mesial line; on the same side, anteriorly, there was a depression on the surface of the brain, corresponding to a projection of the skull inwards in that situation. The substance of the brain was firm in consistence. On cutting into the left hemisphere there was found a small irregular-shaped apoplectic cyst, probably in the place where there had been extravasation of blood at the first attack of paralysis; the optic nerve supplying the right eye was softer and less white than that of the opposite side. Mr. H. concluded his observations on this case by remarking on the difficulty of accounting for the paralysis of the left side, which had occurred so shortly before death.

2. *Tubercular Mole.*—Doctor Montgomery produced the preparation and an accurate drawing of a very curious product of conception. On the 20th of last month he had been applied to for advice by a female who described herself as pregnant, and labouring under violent hæmorrhage from the uterus; her last menstruation had occurred in the preceding March, about the middle of the month; on the 30th of June she said she had quickened, and from that period, had several irregular discharges of blood from the uterus. Dr. M., on examination, observed that the uterus was of the size that it might attain in the middle of the fifth month of pregnancy, it was very hard and at the same time very sensitive to the touch; no sense of fluctuation could be perceived; the os uteri had the characters of the pregnant state. From all the circumstances, Dr. M. considered that it was a case of molar gestation, and he prepared the patient for the event, by desiring her not to be surprised if she passed something like currants or gooseberries; on the 27th he ascertained that this had occurred, and he found that what she had expelled was a very good example of the tubercular mole, whose appearance was very

well delineated in the drawing; it consisted of a pyriform mass with small tumours projecting from it, filled with fluid, some of which were red, some green. A section showed that it consisted of a botryoid congeries of small tumours, among which could be distinguished the umbilical cord with the embryo of very small size attached to its extremity, presenting somewhat of the appearance of a bott in the stomach of a horse. Dr. M. had formed his diagnosis on a consideration of the size of the uterus, on its hardness, its sensitiveness, and the absence of fluctuation.

3. *Fibrous Tumour of the Uterus.*—Dr. Montgomery exhibited a specimen of fibrous tumour of the uterus, which had been transmitted to him from Carlow, where it was taken from the body of a female in whom it had existed for a period of twenty years; it was found imbedded in the anterior wall of the uterus, and was probably vascular, but this could not now be ascertained, as it had been so cut before its transmission to Dr. M., that it could not be injected. To the exterior of this tumour was attached a band of lymph, sufficiently strong to bear the weight of the tumour if suspended by it, and this was a circumstance to which Dr. M. wished to direct attention, because objections had been made to his theory, that such bands were the agents by whose constriction the limbs of the fœtus in utero are amputated. There was another tumour forming in the cavity of the same uterus, which Dr. M. considered might aid in showing how polypi form and increase in bulk within the uterus. On this subject much could be learned from preparations in his museum. Dr. M. observed, that when these uterine tumours are soft, smooth, and even on the surface, and grow to a considerable size, they may be, and often have been, mistaken for pregnancy. A case of this kind had come to his knowledge, where an unmarried female, the mistress of a school in a charitable institution, was suspected of pregnancy, and suspended from her office. This person in a year or two afterwards was married, became really pregnant, and died after parturition.

4. *Peyerian Glands hypertrophied and ulcerated—Superficial Inflammation with Deposit of Lymph in the large Intestine.*—Dr. Lees made some remarks on the disease of children, described by Dr. Cheyne, under the name Atrophia a-blactatorum; and exhibited to the Society the intestines of a child of three or four months old, which had been deserted, and was received into the South Union Workhouse, where it was spoon-fed; but notwithstanding the attention paid to it, marasmus supervened, and it died in a fortnight from its admission, with the usual symptoms of the A. a-blactatorum, as described by Dr. Cheyne in his essay on the bowel complaints of children. It was remarkable, however, that although Dr. Cheyne relates several dissections, yet he has altogether omitted to describe the condition of the mucous membrane in this disease. In this case Dr. Lees found extensive deposition of lymph, with superficial excoriation and ulceration throughout the rectum; the Peyerian glands of lower portion of ileum, and those immediately above the ilio-cœcal valve were hypertrophied, and many of them dotted with minute ulcers. The deposit appeared in the large intestines only; in the sto-

mach and the upper part of the intestinal tube, the mucous membrane was healthy; the liver exhibited no diseased condition—the gall-bladder was filled with bile of a dark green colour. Dr. Lees offered as a probable conjecture, that in cases of this kind, the nutritious matter which should have been absorbed before reaching the large intestine, arriving there unchanged, may act as a foreign body, and excite this peculiar inflammation.

5. *Aneurism of the abdominal Aorta, opening into the Parenchyma of the Lungs.*—Dr. Stokes said the specimens he then produced to the Society were of great pathological interest: they belonged to a case of aneurism of the abdominal aorta at the commencement of its course, immediately under, or between the crura of the diaphragm, and exhibiting a mode of termination that had not as yet been described. In some cases of this affection the opening has been into the pleura, in others into the stomach; into the peritoneum; or behind the peritoneum, forming tumours. In the case now commnnicated by Dr. Stokes, the aneurism had opened into the substance of the lung. The subject of the case had been first seen by Mr. Pakenham, and subsequently by Mr. Colles and Dr. Stokes. He complained of intolerable pain in the lumbar region, which was aggravated by motion, but relieved by lying with the back towards a fire, or by turning on the face. There was strong pulsation in the epigastrium, and a strong bruit de soufflet, or bellows murmur. From all the symptoms, Mr. Pakenham considered the case to be one of aneurism of the abdominal aorta; in consequence of which, the consultation was determined on. Dr. Stokes ascertained that the patient had been complaining for eighteen months, and that he suffered pain of two distinct kinds, one of which was dull and was constantly felt; the other was a violent lancinating pain which only occurred in paroxysms, often darted downwards into the scrotum, and was not observed for the first time, until three months after the other had commenced. The seat of pain was along six vertebræ, the three last dorsal, and the three contiguous lumbar. The pain was increased by pressure on any part of that tract, or by any motion of the spine. A little to the left of the epigastrium was the tumour, in which could be felt a pulsation, evidently coincident with the diastole of the heart. When deep pressure was made, there was an extreme diastolic force perceptible. The bruit de soufflet was increased by motion, and was not audible posteriorly. The pulse was regular, about eighty in the minute; the appetite bad: towards the termination of the case there was pain in the right shoulder. The patient died on this day (January 8th) in a state between syncope and asphyxia, after expectorating a large quantity of blood. On the preceding day his appearance was very haggard, the tumour was pulsating violently, and contrary to what is usual in these cases, the pulse was singularly rapid.

When the body was opened, a small quantity of blood was found in the stomach, which had probably been swallowed in the last agonies of life; there was no effusion into any of the serous cavities. The lung was prodigiously gorged with blood, much of which had been poured into the bronchial tubes; the surface of the lung was abraded

when it was in contact with the aneurism. The aneurism itself was not very large; it was situated immediately between the crura of the diaphragm, between which it passed upwards until it came into contact with the inferior lobe of the lung; the aperture in the artery was in its anterior wall. There was no perforation of the diaphragm by absorption, but the tumour had forced its way upwards between the crura, merely dissecting through cellular connexions.

Dr. Stokes concluded by remarking, that there were three circumstances in this case, which rendered it of great value:—First, the diagnosis of the aneurism from symptoms; second, the confirmation of the stethoscopic signs; third, the peculiar mode of termination, which, as he stated at the commencement, had not been previously described by any pathologist.

6. *Induration and Thickening with osseous Deposition in the mitral Valves.*—Mr. Adams communicated a case of disease of the mitral valves. The subject was a gentleman temperate in his habits, but who had formerly suffered repeated syphilitic attacks, for which he had undergone several mercurial courses. About six years ago he began to feel a difficulty of breathing, and afterwards hæmoptysis and palpitations. Three months ago (on the 3rd of September), while turning in his bed, he perceived a remarkable irregularity in the action of the heart. A few weeks back he came to Dublin, and applied for advice to Mr. Adams, who, on examining him, found that his limbs were anasarcous, and there were evident symptoms of a disease of the heart, but it was doubtful whether it were aneurism or disease of the valves. The second sound of the heart was accompanied by a sound like that observed in cases of aneurism. A consultation was then held with Dr. Stokes, who was of opinion, that the mitral valves were diseased, and that the death would be very sudden. The treatment adopted consisted in the exhibition of small doses of calomel, squill and digitalis, together with small bleedings by leeches, which were used in preference to small bleedings from the arm, in consequence of the patient's statement, that venesection caused him to faint, and this is objectionable in diseases of the heart. At this time, although the action of the heart was violent, the pulse at the wrist was very weak, the respiration was generally sound, but at night dyspnœa occurred in paroxysms. The death was very sudden; it occurred soon after breakfast, while the patient was on the night chair. The left ventricle was found to be considerably dilated, and the mitral valves indurated, thickened, and infiltrated with a yellowish material, which, in some parts, was ossified. The appearances were well delineated in a drawing produced by Mr. Adams.

Eighth Meeting, January 15, 1842.

Dr. Law in the Chair.

1. *Pneumothorax in a Child two Years of Age.—Fatty Liver and Tubercular Deposition.*—Dr. Lees laid before the Society the recent parts in this case, which was that of a deserted child, aged two years, who had died on the preceding day, in the South Union Hospital,

after suffering for some time under scrofulous disease of the lungs and abdomen, with the usual symptoms, besides which the feet and hands were œdematous, and the general appearance bloated. The cough and diarrhœa had been relieved by appropriate treatment; the sleep was good, and the constitutional symptoms not very remarkable. On the morning of the 14th, while Dr. Lees was visiting the Hospital, he was informed by the nurse that this child had been screaming frequently during the night, and had continued to do so throughout the morning. Soon after the visit it died.

At the inspection of the body after death, it was observed that a good deal of air gushed from left side of thorax on its being opened—the heart appeared pushed to the right of the mesial line. The pleura, both on the surface of left lung and parietes of thorax on the same side, was coated with lymph: at the angle of the fourth rib there was a fistulous opening, not valvular, communicating with a tubercular cavity, and through which air could pass (as Dr. Lees then demonstrated to the Society). Immediately above the opening, into the pleura, was an adhesion. Both lungs were studded with tubercles. The liver presented a good specimen of what has been designated *the fatty liver*. It was larger than the natural size, pale, yellow, and œdematous, coated with the rough or scabrous matter, described by Dr. Hodgkin. There were the usual appearances of mesenteric disease.

This case was remarkable, both from its presenting Pneumothorax at an earlier age than had been before described, and also from its agreement with the cases described by Louis, both in the situation of the perforation, and its occurrence at the left side.

2. *Cirrhosis of Liver.—Peritonitis.*—Dr. Bigger exhibited the recent parts, and detailed the history of this case. Mary Jones, æt. 32, a married woman, was admitted into the Adelaide Hospital on the 7th of December, 1841, labouring under ascites. She described herself to have been three months ill. She complained only of distress from the distention of the abdomen, and difficult respiration. She had a femoral hernia on the left side. The urine was scanty, and deposited a copious sentiment. Dr. Bigger remarked the unusual position of the umbilicus, which, at the time of her admission, was within two inches of the pubes. She was treated for some days with diuretics, calomel, squill, and opium. The dropsy became stationary; but on the 18th, the dyspnœa increased; there was much cough, and she became jaundiced. There had been some slight icteric appearance previously, but it was now complete and general. A mercurial treat- was adopted, but suspended on the 19th, on account of its too great action on the bowels. A consultation was now held, at which paracentesis of the abdomen was decided on, as the only means of retarding, for some time, the fatal termination. The operation was accordingly performed, and three gallons, of a straw-coloured fluid, drawn off, by which time the umbilicus had risen to five inches above the pubis. As there was great prostration of strength towards evening, wine was administered, and its use persisted in up to the 6th of January, on which day the bandages were re-adjusted. No enlargement of any viscus could be detected, and she did not complain of any pain, and appeared

to have rallied a good deal. Diuretics were ordered; but after a short time she sunk gradually, and died on the 11th. The body was examined after death. There was some serum in one side of the thorax, but the thoracic viscera, themselves, appeared healthy. The liver was large, and in the cirrhosed condition. The gall-bladder was distended with thin bile. The spleen was four-times larger than the natural size. The omentum had been acutely inflamed; it was contracted, and agglutinated by lymph. The small intestines were covered by the tubercles described by Bayle, evidently the result of some former inflammation.

3. *Malignant Tumour of Wrist.*—Mr. Lynch exhibited the recent specimen, and a drawing, giving two views of the tumour. The subject was a man, aged 33, admitted into Jervis-street Hospital on 2nd January. He described himself to have enjoyed good health up to four years ago, when he became affected with pain, and a burning sensation in the arm and hand. About two years after the commencement of these symptoms, a tumour formed on the palmar-surface of the wrist, and about the end of the radius, towards the carpus; the pain became more severe at night; and the tumour, which was elastic, with an obscure sense of fluctuation, gradually increased in size. In this state he applied for advice at a Dispensary, where pressure on the tumour, and the use of iodine, were resorted to without success. At the time of his admission into Hospital, it was evident that amputation of the limb was necessary; the tumour was tense, firm, and nodulated, with five or six prominent points ulcerated at the summits, from which a sero-sanguineous fluid exuded. The integuments, covering the tumour, were tense and shining, and several large veins, of a varicose appearance, could be traced into the diseased mass. There was intense pain in every position. The operation was performed on the 12th. Mr. Lynch, having made a section of the tumour, exhibited its structure to the meeting; in the centre were numerous cysts, filled with a glairy fluid, towards the circumference cells, containing bloody and sanious matter. The interstices were of a cartilaginous firmness.

4. *Icterus—Tubercles in the Liver—Ulceration and Perforation of Gall-bladder. Peritonitis—Ulceration of Mucous Membrane of Stomach, with Hæmorrhage.*—Mr. Ferrall said the case to which the recent specimens, he then presented, had belonged, was one of considerable interest. The symptoms, during life, were not at all proportionate to the variety of morbid lesions observed in the examination after death. The subject was 36 or 37 years of age, but looked to be 50, probably in consequence of long continued illness. He had been several months jaundiced, and had been actively, though ineffectually, treated before his admission into St. Vincent's Hospital. He was there, in the first instance, treated with small doses of the mineral acids, with the intention of giving tone to the stomach, and relieving general debility. About a week ago, he was attacked by severe pain in the right hypochondrium, and it became evident that acute peritonitis had suddenly set in. Appropriate treatment was adopted; calomel was exhibited in small and opium in large doses,

with the effect of relieving the pain; but the patient continued sinking for three or four days, during which vomiting of mucus, with the liquids that had been swallowed, occurred, and the death happened suddenly, while Mr. F. was still in the ward, after completing the visit. The fatal termination probably took place in a state of syncope. When the body was examined, some fluid blood was found in the stomach. The inner coat of the stomach was studded with minute ulcers, in each of which was a clot of blood. It was evident there had been hæmorrhage from each of these ulcers, which, as the specimen showed, were numerous. It was remarkable, that during life there had been no symptom of gastric disease, until the peritoneal inflammation occurred. The liver was large and dark-coloured; it was studded with tubercles, a condition that had been diagnosed during life. The gall-bladder was of very large dimensions, and its parietes were greatly thickened. Within it were several patches of ulceration; in one of of which a perforation had occurred. The perforation was larger within, than on its external aspect; and there was some appearance of an effort of nature to close it with lymph. The ducts were of unusual size. The orifice of the ductus communis was hard, contracted, and thickened (scirrhous?) It projected into the duodenum, with an appearance like that of the os uteri. Above this dense and contracted part, the duct was enormously dilated. The opening of the pancreatic duct was involved in the same morbid structure. Mr. F. observed that jaundice was a disease of whose history there was much that remained uncertain and obscure; he detailed the opinions of several eminent physicians, and particularly those of Abercrombie, Alison, and Marsh; and pointed out the difficulty of ascertaining, by any diagnostic means, such obstruction of the excretory passages as he had shown in the present case.

5. *Cancer of the Penis.*—Mr. Smily produced a specimen of cancer of the penis, removed by amputation, from a man aged eighty.—The disease had commenced about two years ago, with an itching sensation in the prepuce, upon which a tumour gradually formed. At the end of a year, it became attached to the corpus spongiosum, and about six months afterwards it ulcerated. The morbid growth pressed on the urethra so much as to impede the discharge of urine. There was little or no pain, and there had been no phymosis. The specimen exhibited the usual structure of scirrhus.

6. *Aneurism of the transverse Portion of the Arch of the Aorta, compressing and perforating the Trachea.*—Mr. Smith presented a specimen of aneurism of the arch of the aorta, taken from the body of a man, æt. 47. In March, 1840, he had been an extern patient at the Richmond Hospital, in consequence of having received a luxation of the head of the humerus into the axilla. He, at that time, did not complain of any symptoms of the disease, of which he died. In May, 1841, he was admitted into the Whitworth Hospital, complaining of a constant boring pain between the scapulæ, and of an occasional darting pain up the back, and along the side of the neck, severe headach, and a tingling sensation in the right arm. The examina-

tion of the chest failed in detecting any bruit de soufflet, or any impulse, except in the region of the heart. The respiratory murmur was less distinct in the right than in the left lung. He had, at this time, scarcely any cough or dyspnœa, nor was his voice affected. From this period until June 17, there was no remarkable alteration in his condition, but then the pain became much more severe and constant. He had a distressing cough; the pulse could not be felt in the right radial artery; a bruit de soufflet was now distinctly audible, and his voice was weak.

November 23.—He was now paralysed on the right side; the paralysis also engaged the sphincters; there was a tendency to coma; he had aphonia, and frequent bleedings from the nostrils; he died January 7, 1842.

Autopsia.—An aneurism as large as an orange was found springing from the arch of the aorta, between the origin of the arteria innominata and the left carotid; a coagulum, of great density and firmness, completely closed the orifice of the former vessel, and extended about half an inch into it; the aneurismal tumour compressed the trachea to such a degree, as to bring into contact the anterior and posterior walls of that tube; towards its left side, they were adherent to each other; in the anterior wall there was a circular aperture, as large as a silver fourpenny; this aperture, upon the side next to the aneurism, was closed by the coagulum of the sac, of a white colour, and remarkable firmness; and upon the side next the interior of the trachea, by the adhesion to its circumference of the posterior wall of the air-tube, the mucous surface of which, to an extent exactly corresponding to the aperture in the anterior wall, was ulcerated, the surface presenting a sloughy appearance; the mucous membrane, throughout the remainder of the trachea, as well as in the large bronchial tubes, was very vascular, and of a bright red colour. There had not been, in this case, any stridulous breathing. Time did not permit an examination of the head; but Mr. Smith conceived that the occurrence of paralysis was not difficult of explanation; and, in conclusion, remarked that the adhesion of the walls of the trachea to each other conferred great interest on this case, preventing, along with the coagulum of the sac, the escape of the blood, although an aperture, fully a quarter of an inch in diameter, existed in the front of the trachea, and back of the aneurismal tumour. (*Museum, Richmond Hospital.*)

Dr. Ender's *View of the Mechanism of the first inspiratory Movement, and of the Condition of the Air Cells in Pulmonary Emphysema.* From Rust's Magazin, für die gesammte heilkunch, 1842.—The act of inspiration begins with the manifestation of a vital power;—the effective co-operation of the inspiratory muscles, which dilate the thoracic cavity. The contractile action of the lungs which immediately follows, is in obedience to laws purely physical. During the act of each inspiration, the lungs are forced into immediate contact with the parietes of the chest, otherwise a vacuum would take

place between the latter and the lung; hence dilatation of the thorax is impossible without a simultaneous inhalation of air. Let a bladder, communicating with the external air, be introduced under the bell of an air pump; as soon as the receiver has been exhausted, the bladder will dilate at the expense of the external air with which that within the bladder maintains itself in equilibrium.

Similar to this is the dilatation of the lung during inspiration, an act as purely physical and requiring only elasticity of the pulmonary tissue, which the lung is admitted to possess in a high degree, and without which it must inevitably be ruptured by the forcible expansion which follows each successive current inwards of air. If we suppose inspiration at its maximum, the entire pulmonary parenchyma is densely supplied with air, filled, indeed, beyond its natural capacity; each bronchial ramification, and air vesicle, is dilated beyond its normal standard; the diaphragm is tensely stretched, and the abdominal covering drawn forwards.

Expiration succeeds; the muscles heretofore engaged, relax and lose their influence; the substance of the lung, distended above its natural volume by air, contracts from its inherent elasticity; the walls of the chest, yielding to the atmospheric pressure, follow, and prevent the occurrence of a vacuum in the cavum pleuræ, whilst the highly elastic attachment of the ribs, by cartilage, ever struggling to regain their position of repose, favours this retractile movement of the pulmonary apparatus most signally. The diaphragm, also, a muscle active only during inspiration, influenced by the same mechanical impulse, retiring with the yielding lung, becomes concave, and hence prevents (between itself and the lung) the vacuum which here, likewise, would otherwise occur. Where, then, is there here a vital power? The lung, contracting by reason of its own elasticity; the pressure of the external atmosphere; the highly elastic attachment of the ribs, by cartilage, satisfactorily and completely explain the act of expiration.

When the lungs have now returned to their natural capacity, the medium between inspiration and expiration, and expelled their superabundant supply of air, the still continuous action of the expiratory muscles on the thoracic walls succeeds, hitherto unnoticed; which, compressing the lungs, forces from them in turn a further quantity of air, till diminished below their natural volume; their elasticity, in striving to recover itself, distends the parietes of each air vesicle, and thereby induces the first impulse to each new and succeeding inspiration. This presumed agency of the expiratory muscles, just at the moment when the lung has resumed its standard capacity, explains many physiological phenomena otherwise unaccounted for. Up to the present period, the rhythmical periodicity of involuntary breathing is enigmatical. That this rhythm is not occasioned by irritation of the atmospheric air upon the nerves of the respiratory apparatus, is evident from the fact that division of the nervi vagi in the neck, and of the superior laryngeal nerve, by which susceptibility of irritation from atmospheric air in the lung is completely interrupted, interferes not with this movement. At the close of expiration, as we have men-

tioned above, when the pulmonary tissue, forced by its inherent elasticity again to reseek its condition of dilatation, this commencement of a mechanical power induces the rhythmical tendency of movement in the inspiratory muscles. The regularity of a vital movement is hence superinduced by physical agency, and the uninterrupted current from the medulla oblongata maintained through the medium of the pulmonary elasticity. During sleep, when inspiration is much deeper, and expiration more forcible than while waking, the rhythm of the involuntary respiratory movements is inexplicable, if we do not admit this mechanical co-operating power. The first inspiration of the new-born infant was until now a subject of dispute. Müller conceives its cause to depend on the irritation which the arterialization of the blood in the lung exercises on the medulla oblongata. But this theory presupposes an act, or at least the commencement of an act of breathing, to have already taken place. On the contrary, examine for a moment the relative pressure in which the fœtus in utero, and under which the recens natus, exist, and our opinion must be different.

As long as the fœtus remains within its mother, it is subject to the pressure of 28 inches barometric measure; but it is also compressed by the uterine fluids within which it is enclosed, and by the superincumbent walls of the uterus itself. The embryo lung is a compact body, whose tissue contains no air, and is specifically heavier than water. After birth, the thorax is only subject to the 28 inches barometric pressure; and elasticity, now relieved from its external resisting influences, becomes active; dilatation of the pulmonary tissue takes place; the blood undergoing arterialization at the same time, acts as an irritant on the medulla oblongata, and thus is brought about the first muscular act of inspiration. A vital power is here subsequent and subservient to the commencing effort of a mechanical one.

The Genesis of the Emphysema of the Lung.—Emphysema consists in an abnormal dilatation of the air cells, which has become permanent, without necessarily being accompanied with laceration of these cells, or inducing it as a consequence.

In order to explain more correctly the occurrence of this diseased state of lung, Dr. Ender tried the experiment whether elastic substances, when forcibly and repeatedly stretched, return to their original size or not. He accordingly stretched a long slip of gum elastic, whose length had been before noted, repeatedly with much force, yet carefully enough to prevent injury being done to any of its fibres, and found it did not resume its original length *a*, but a medium between its normal *a* and the limit of extension *b*. The pulmonary tissue being highly elastic, must, after frequent distention, be deprived in like manner of that quality. Hence, in constantly occurring deep inspirations, as amongst the labouring classes, and violent coughing, &c., isolated spots of the pulmonary tissue being forcibly distended, do not return to their original calibre.

Let us suppose the pulmonary vesicle, in its natural condition, to

be *a*, and *b* the limit of its greatest distention; the size of the emphysematous cell may remain permanently at *b*, or attain a degree of distention even greater. If in this state the small bronchial tube leading to the cell becomes blocked up by mucus or any other secretion, it is evident, that as the cell remains permanently distended at *b*, the elasticity which in health it enjoyed will not serve to expel its contained air; and this can only be accomplished by the contraction of the thoracic parietes. But here again the blocked up condition of the bronchial tube prevents the expulsion by this latter force of the contained air which now becomes rarified, and, by still further dilating the cell, compresses the tubes leading to the adjoining cells, and in this way keeps up a permanently distended condition of several cells, and so produces a true emphysema of that part of the lung. If we suppose inspiration to have commenced, when the walls of the chest have expanded, each of these tubular passages will be relieved of its constriction, the emphysematous cell will dilate itself again, to supply the increased space within the thorax, and permit either a complete or partial current of new air into each neighbouring cell. And if we examine this process a little farther, we find that the original emphysematous cell still permits the repeated currents of air into its neighbouring vesicles, but not its egress from the same during expiration; that is, the cells become abnormally dilated, and finally emphysematous.

Pathological anatomy shows us, with reference to the condition of an emphysematous lung, the following appearances:

1. A mere dilatation of the air-cells with increase of their cubic contents.

2. A dilatation of the cells with rupture of their walls, so that a number form into one chamber. An emphysematous cell permits, as we have seen above, the inward current of air *into* the surrounding vesicles only, but not its expulsion from them. In very forcible inspiration, in which the patient augments the quantity of air contained in the cell, whose efferent outlet, as already described, is valvularly closed during expiration, its parietes, no longer able to resist the expansion of its new supply of air, yields at last, and tears, permitting effusion of air into the contiguous cells. During common inspiration, on the contrary, when the entrance leading to the cell becomes free, the air already confined within it opposes, by its elasticity, a hindrance to a new current of air. But when the thorax, during inspiration, becomes expanded with greater energy, beyond its usual capacity, the cell *b* not yet having expended all its elasticity, dilating itself also to follow the movements of the external walls, must admit an additional supply of air; so that, when expiration takes place, and its communicating outlet again contracted, it returns, by means of its still existing elasticity, to volume *b*, but is easily lacerated by the resisting air now necessarily forcibly compressed within.

3. A combination of this second condition with a true emphysema of the cellular parenchyma situated between the tubules. Two

cases of this description were examined after death, in the Hopital de la Charité lately.

The first was a consumptive patient, whose inferior right lobe was attacked with emphysema. The disease had spread to certain places of the lung adjacent, leaving the intervening parts perfectly normal.

The other had died of hypertrophy of the heart. In the inferior left lobe was found a limited emphysematous spot, which nature had, in a remarkable manner, prevented from being injurious. Round about the diseased portion was found a layer of thickened cellular tissue, which had circumscribed the disease, and thus mechanically prevented its extension to the neighbouring tissue. It would be an interesting inquiry to examine whether nature always makes use of this remedial means of interrupting emphysema.

The distinguished Dr. Stokes conceives this disease to be frequently consequent on chronic bronchitis. The secretion of a viscid phlegm may certainly assist in its development and continuance. Thickening and contraction of the mucous membrane may also obstruct the air-vesicles, and the increased temperature of the now confined air may occasion dilatation of the cell. That this is, however, not always the case, and very rarely an efficient agent, is proved by the frequent recovery of patients from bronchitis, without emphysema being left behind. On the contrary, bronchitis must often occur as a result, through the violent efforts at respiration in the patient, since the air permanently detained in the pulmonary vesicles, becoming altered in quality, must act prejudicially on the mucous membrane.

In reference to the diagnosis of the disease, which is founded upon the inverse ratio between the clearness of sound on percussion, and feebleness of the respiratory murmur, its genesis, above described, naturally accounts for such a pathognomonic sign, as well as for the one mentioned by later writers, the increased length of the expiratory murmur in emphysema, since we have seen that the primarily affected cell during expiration is compressed by means of the contraction of the thoracic parietes, and the communicating tubes of the surrounding vesicles still more diminished by the resisting air within, at the end of expiration are completely closed up and impervious; but when inspiration returns, they again expand, the sternal cavity at the same time widening, disemburthens those canals of their pressure, and renders the inspiratory movement comparatively unembarrassed.

Extreme cases of this disease are followed by irregularity in the structure of the sternal apparatus, and displacement of the viscera, the scapula is prominent, the clavicles rounded, the intercostal spaces are widened, however only in the direction from above downwards, but not arched forwards; the lungs themselves are also dilated in the same direction from above downwards; the interval between the ribs increased still more, and its connecting tissue tensely stretched. In pleuritic effusion and in empyema the case is the reverse; here we have to do with a fluid, and not an elastic gas; hence the dilatation of the thorax is from before backwards, the fluid widening the intercostal spaces, and at the same time protruding them forwards. W. W.

Births, Deaths, and Marriages.

REPORT.—*To the Right Hon. Sir James Graham, Bart., M.P., Her Majesty's Principal Secretary of State for the Home Department.*

General Register-office, Aug. 8, 1842.

SIR—In conformity with directionscontained in the 6th section of the Act for Registering Births, Deaths, and Marriages in England, I have the honour of submitting to you, for the purpose of being laid before Parliament, a general abstract of the births, deaths, and marriages, registered during the year ending June 30, 1841.

The following statement presents a comparative view of the number of births, deaths, and marriages, which were registered in the four years ending June 30, 1841 :—

	1837-8.	1838-9.	1839-40.	1840-1.
Births.....	399,712	480,540	501,589	504,543
Deaths	335,956	331,007	350,101	355,622
Marriages ...	111,481	121,083	124,329	122,482

The kingdom has been divided, for the purposes of registration, into 619 districts, superintendent registrar's districts, which are almost invariably conterminous with the unions, where unions have been formed. The districts have been again divided into sub-districts, or registrar's districts, 2,181 in number, each containing one or more parishes, except in the metropolis, and in Manchester, Liverpool, and other populous parishes, which have been subdivided into several registrar's districts. In a purely scientific division of the country, the smaller would all be contained exactly in the larger compartments; the townships in parishes, the parishes in hundreds, the hundreds in counties, &c.; but it was found, when the first census was taken, and is stated in the preface to the Enumeration Abstracts, 1831 (p. 16), that "there are in England and Wales about 550 parishes, which are known to extend into two counties, or into more than one hundred, or other division." Moreover, detached parts of certain counties are completely surrounded by other counties. It would, therefore, have been impossible to include in counties any given number of districts, of which parishes were integral parts; but the difficulty has been increased in the formation of superintendent registrar's districts by uniting—as was done by the poor-law commissioners, with a view to the administration of the new poor-law—parishes in two or in more counties. I find that of the 619 superintendent registrar's districts, 188 extend into more than one county. * * * * * * *

The marriages registered have been nearly 1 in 127, the births 1 in 32, the deaths 1 in 45, of the population.

As several of the calculations will be founded on the population existing in England and Wales, in the four years ending June 30, 1841, I shall state as clearly as I can upon what principle the population has been estimated in those years, without entering into de-

tails, which will more properly find a place in the report of the census commission. The population of England, enumerated in the year 1821, comprised 3,105,895 more persons than had been enumerated in 1801; whilst the increase of numbers in the twenty years from 31st May, 1821, to 6th June, 1841, was 3,930,416, leaving the army, navy, marines, and registered seamen out of the account. If a correction were made for these bodies, which fluctuated so much in the forty years, the increase of males would be found nearly the same as that of females; and, according to the best information in my possession, I consider it better to assume at present that the whole population of the kingdom has increased within the last ten years at the same rate as the females enumerated, than to attempt to fix the exact rate of increase among males by making a series of suppositions relative to the disturbing effects of the army, navy, marine, registered seamen, emigration, and the possible omissions in the five censuses.

The increase of females in the ten years, 1831-1841, was 14·17 per cent., or at the rate of 1·334 per cent. annually; and if it be assumed that the increase was uniformly at this rate throughout the ten years, the population in the middle of each of the four years ending June 30, 1841, must have been as follows:—

	Males.	Females.	Total.
Dec. 31st, 1840	7,730,929	8,090,320	15,821,249
,, 1839	7,629,167	7,983,827	15,612,994
,, 1838	7,528,743	7,878,734	15,407,477
,, 1837	7,429,643	7,775,027	15,204,670

At the last census (1841), the soldiers and seamen who slept ashore on the night of June 6, were enumerated, and are included in the preceding estimate, which is given as a near approximation to the numbers who have incurred the risk of death in England since the Registration Act came into operation. With some slight addition to the males for men on shipboard, who were not enumerated, but would be buried ashore and registered if they died, the ratio of the deaths registered to the above population will express the true rate of mortality. The same numbers cannot strictly be applied to the births and marriages; for it will be observed that in December 31st, 1840, the males were not so numerous by 359,391 as the females; and among the absent would be included part of the army, navy, seamen, convicts, and civilians abroad, a certain proportion of whom should be added to the 7,730,929 enumerated, to obtain the true divisors of the births and marriages. As the men socially connected with the population in different parts of the kingdom, and at different times, but absent at the decennial censuses, must necessarily vary in number, I have taken the female population as the basis of nearly all the comparisons. Independently of the difficulty in this country of ascertaining the exact number of males that should be taken into account, it is, I apprehend, generally more relevant to the objects of inquiry to compare the marriages and the births of the females living, than is usually done, with the entire population.

I give below the proportion of marriages, births, and deaths to the

population (male and female) in the usual way, which I must repeat, makes the proportion of marriages rather too high (though to an extent which cannot be determined); inasmuch as the marriages of many persons are registered who leave the kingdom or are absent at the time at which the census is taken. The immigration and emigration of married or unmarried persons in undue proportion may also influence the results.

The following table shows the proportion of marriages, births, and deaths to the male and female population respectively; the marriages decreased slightly in the last year, and were relatively to the female population nearly three per cent. less than in the preceding year. The decrease was observed in all the divisions of the kingdom, except the south-eastern counties. It was most obvious in Yorkshire, and the north-western division, particularly as compared with the registration of the year 1838-1839. Thus, in that year, 1,737 women were married in Lancashire and Cheshire out of 100,000; in the last year only 1,663 were married out of the same population. The proportion of females married in each division of the kingdom is shown in the table. The metropolis stands at the head of the list; but this arises in part from the number of marriages that take place in the metropolis, of persons usually resident in the country, and from the excess of persons between the age of 20 and 40, who flock to London from all parts of the kingdom, and marry there when they have settled. After an allowance has been made for these circumstances, it is still probable that the proportion of persons married in the metropolis is above the average of the kingdom. The marriages in the parishes of Middlesex and Surrey, and Essex, contiguous to but beyond the pale of the metropolis, are diminished in an undue ratio; the relative number of marriages in other counties remaining probably undisturbed by the quota which they contribute to the metropolitan registry.

The table exhibits a considerable difference in the proportions married; thus, to 100,000 females, the marriages in the north western division (Cheshire, Lancashire) were 1,694; in the south-western division, 1,346; in Yorkshire, 1,642; in the eastern division, 1,347; in the western division, 1,594; in the south-eastern division, 1,308. Out of the same population (100,000) from 300 to 350 more women were married every year in the first than in the second class of counties; the difference is 22-26 per cent. The counties in which the marriages were least numerous, lie south of a line running from the Wash to the mouth of the river Avon. At pages 72-77, will be found tabular statements of the proportion of marriages, births, and deaths in each county.

It is stated in the Marriage Registers in every case, whether the person married was a minor or of full age; and the following numbers and proportions have been derived from the registers:

MARRIED IN THE THREE YEARS ENDING JUNE 30, 1841.

Total married.	Under Age.		Of full Age.	
	Number.	Proportion per ct. to the whole Number married.	Number.	Proportion per ct. to the whole Number married.
367,894 couples.	17,266 men.	4·69	350,628 men.	95·31
or				
735,788 persons.	50,714 women.	13·78	317,180 women.	86·22
Totals and Mean.	67,980.	9·23	667,808	90·77

The men under age were to those of full age nearly as 5 to 95; the women as 14 to 86. The proportions differ considerably in various parts of the country; thus, in the south midland division, nearly 21 in 100 women, and 8 in 100 men were minors; whilst in the western division, 14 women and 5 men, and in Wales, 9 women and 3 men in 100, were under age. In the county of Bedford, 25 in 100 women marry under age; in Huntingdon, 25; in Cambridge, 23; in Essex, 23; in Northampton, 22; in Hertford, 22; in the west riding of York, 21; in the east riding of York, 11; Cumberland, 10; Westmoreland, 10; Devon, 9; Salop, 9; Hereford, 9. The facts are shown in detail in the subjoined table, and upon referring to table, page 78, where the proportions are stated separately for each of the three years, it will be evident that the disparities are regulated by constant causes, as the slight fluctuations are accounted for by the smallness of the numbers which enter into the calculations.

The proportion of women who marry under age is to the men nearly as three to one; in the metropolis as $4\frac{1}{2}$ to one; in the north-western division as $2\frac{1}{2}$ to 1.

As the age at which marriages take place, in connexion with the increase of population, is supposed to have a great influence upon the misery or happiness of the people, I wish I could have stated the ages of the persons who were married in every county; but the exact ages were only specified in a small number of districts, and the number of districts in which this was done last year was less than in any previous year.

All the births are not registered. The number omitted amounts to several thousands. I hope that the registrars, when they are made acquainted with this fact, will be induced to employ more vigilance in discovering the births that occur in their districts; but I am of opinion, that the registration of births will not be complete until it is enacted by law, that the father or mother, or some other qualified informant, shall give notice within a fixed period to the registrar of a birth having taken place. Although I have not the means of giving an exact estimate of the proportions of births omitted in different

parts of the country, it may not be altogether useless to state the relative proportion of births registered to the female population in the eleven divisions.

From the manner in which the facts are arranged, it will be perceived, that the proportion of births to the population is above the average of England in the north-western, York, north midland, northern, western, and south midland divisions; and below the average in the Welsh, eastern, south-western, south-eastern, and metropolitan divisions. Out of the same female population (100,000), 1,440 more births were registered in Lancashire and Cheshire than in Kent and the other south-eastern counties. There is a general agreement between this arrangement and an arrangement founded on the increase of population; except that the metropolitan and Welsh divisions increased (by immigration) faster than the births would indicate. The births decreased by 47 in the 100,000, in the last year; and the decrease occurred in all the divisions except the northern, south-eastern, and metropolitan. The first year (1838–9) scarcely admits of comparison with the two last years, as the present system of registration had not then attained its maximum efficiency; it will be observed, nevertheless, that the births registered in Cheshire and Lancashire were 7,152, 7,120, and 7,012 to 100,000, exhibiting a progressive decline in the three years. The total number of births registered in the Lancashire districts was 61,523, 62,740, and 62,621.

The births of 769,983 boys, and of 725,689 girls, were registered in the three last years; so that, in 100,000 births, 51,187 were boys, 48,813 girls; or the boys were born in the proportion of 10,486 to 10,000 girls. The excess of males born was greatest in the northern, least in the southern parts of England. The greatest number of births is registered in the winter and spring quarters; in those quarters, also, the proportion of males to females born is greatest. In the last two years, 105 boys have been born to 100 girls, or 21 boys to every 20 girls. The greater mortality of males reduces them nearly to an equality with females by the age of 20. When the males born were to the females born in the proportion of 10,486 to 10,000, the deaths of males at home were to the death of females as 10,340 to 10,000: and at the last census the males were to the females enumerated as 10,000 males to 10,465 females, notwithstanding the excess of males born.

More deaths were registered in the year ending 30th of June, 1841, than in any preceding year; the numbered registered (355,622) having exceeded the deaths in the three previous years by 5,521, and 24,615, and 19,666 respectively. To judge accurately of the rate of mortality, the increase of the population must be taken into account; and we then find that the mortality last year slightly exceeded the mortality of the preceding year, and was nearly 6 per cent. (5·7) above that of the year 1838–9. The relative annual mortality per cent., as shown by the mortality of females, was 2·055, and 2·157, and 2·171: if a correction be made for the deaths not registered in the first year (1837–8), the mortality in that year will be found little less than that

which prevailed in 1840–1. I refer to page 6, for a statement of the relative mortality of males in the four years.

With reference to the increase or decrease of mortality in the several divisions of the kingdom, it will be seen by the annexed table that the mortality attained its maximum in 1839–40, throughout the north-western, York, and north-midland divisions; whilst it increascd slightly but progressively from 1838–9, to 1840–1, in the western, south-midland, northern, Welsh, south-eastern, and south-western divisions. The mortality was lowest in Essex, Suffolk, and Norfolk, and in the metropolis, when it was highest in Cheshire and Lancashire (1839–40). The mortality, I may remark, in that year was excessively high in the north-western division; but I have the satisfaction of stating, on the authority of the quarterly returns, that the decline observable in 1840–41, continued in 1842. The diseases causing the mortality will be stated in the appendix. It may be mentioned here that scarlatina was epidemic in 1840, and committed great ravages in Lancashire. The same disease has since been epidemic in the southern parts of the island.

A glance at the table will show that the mortality in different parts of the country has differed to an extent ranging from 1,799 to 2,670 annual deaths out of the same number (100,000) living. The mortality was above the average of England (2,113) in the north-western, metropolitan, York, and north-midland divisions, and below the average of England in the seven remaining divisions. The metropolitan division, with its dense city population, which is recruited partly by immigration, can scarcely be compared with the other ten divisions; the mortality is necessarily higher than it would be among the same population scattered over a wider space, if equal precautions were taken to remove, as well as to dilute, the effluvial poisons generated around human habitations. The density of population in Lancashire, though much greater than in the rest of the kingdom, is incomparably less than the density of the population in the metropolis: yet the mean mortality was higher in that county than the mortality of the metropolis during the three last years.

The mortality was nearly half as high again in the north-western division, as it was in the south-western division. It may make the fact more striking to those who are unaccustomed to calculations of this kind, to state, that, if the mortality had been everywhere as high as in the north-western division, instead of 355,622 deaths, 449,360 would have occurred last year; and that only 302,800 deaths would have been registered, if the mortality of the entire population had been as low as that observed in the south-western counties.

It has been known for many years that the mortality is, as a general rule, higher in the cities than in the country; and it has always been a matter of much interest to know the relative mortality of different cities. Since it has been proved that the mortality of cities may be greatly reduced, the question has acquired additional interest from the facility it affords for analysing the causes of insalubrity, demonstrating their existence, and suggesting the means by which their ravages may be effectually arrested.

In the comparison of the mortality of the towns or cities of this and of other countries a fallacy has been overlooked, which I have endeavoured to avoid in the annexed table by giving the density of the population in the respective town districts.

In fortified towns, as the population increases, the boundaries have been sometimes extended to the suburban population, for administrative purposes; and this has perhaps been more frequently the case in our unfortified towns, with nothing to draw a line of demarcation between the town and the surrounding country. The successive incorporations in this country have generally been by parishes, parts of which have been covered with streets and houses, whilst other parts were thinly inhabited. The towns, therefore, comprise a town and country population, the ratio of dense and scattered population differing in every town. The confusion of the two classes of population has also in some instances been increased by the formation of unions, for the purpose of administering the new poor-law, where a large number of country parishes have been united with the towns, and have thus given the registration districts a totally different character from the towns after which they are named.

The town mortality generally increases with the density of the districts: which would not be the case, if the same neglect of the means of sewerage and purification did not pervade the worst parts of all of them to nearly an equal extent.

The influence of site, habits, diet, and employments on the duration of the lives of the inhabitants, can only be successfully investigated on the spot; and I am happy to learn that this important duty has been undertaken in Leeds, Birmingham, and other places by the town councils and medical societies.

I have now to notice a series of important facts, from which the mortality of the people of this kingdom may be calculated, at the successive stages of existence. In a population rapidly increasing, disturbed by immigration or emigration, and liable to fluctuations in the rate of mortality, the law of mortality, and consequently the duration of life, or the expectation of life at different ages, can only be deduced with any approach to accuracy from two series of facts; (1), the population existing at annual, quinquennial, or decennial periods of life, and (2), the deaths at the corresponding ages. Nearly all the deaths at the respective ages have been registered; and, except during the first year, it may be safely assumed that the omissions in the registry of deaths are not more numerous than the countervailing omissions in the enumerations of the living. The deaths which occurred in the first year (1st July, 1837, to 30th June, 1838), and which were registered in the second year, or were not registered at all, may be set down as 5,700. The mean number of persons living at the respective ages, during the years in which the deaths occurred, is required for the purposes of the calculation. If the living at different ages had been enumerated in the middle of the year (1st July), and if we had the deaths at the same ages in the year 1841, the division of the number of deaths at each age—by the number living—would show without further trouble the annual mortality at every age.

The division by the number living of the mean annual number of deaths at each age in the three years 1840, 1841, and 1842; or in the seven years 1838, 1839, 1840, 1841, 1842, 1843, and 1844, will in like manner exhibit the annual rate of mortality; for the numbers living in the middle of a short period represent with sufficient accuracy the mean numbers living during the whole period. The average of seven years will give the prevailing law of mortality. In the mean time it appears desirable to obtain as near an approximation to the prevailing law of mortality as is practicable, from the materials placed in my hands, by the abstracts of deaths in the four years ending 30th June, 1841, and the census of the 6th June, 1841. The data from which the calculations have been made, are given in the table of the males and females living on 31st May, 1821, and on 31st December, 1841; with the deaths of males and females registered in each of the four years, June, 1837–41.

The ages of the population were not enumerated in the year 1831; and the ages of only eight-ninths of the population were enumerated in 1821. The column (1) in the table has been obtained by multiplying the number of females enumerated at the respective ages by 1·1425. A similar correction was applied to the males and to the enumerated population (column 2) in 1841, when the ages of only 37,248 of the population were not stated; and the population at every age has been reduced to what it must have been on 31st December, the middle of the year (1840–41), if the numbers living at each age increased uniformly in geometrical progression from 1821 to 1841. The division of the deaths at the different ages in the year ending 30th June, 1841, by the number of persons living on 31st December, 1840, will give the annual mortality at each age in that year (1st July, 1840, to 30th June, 1841). Upon the same principle the annual rate of mortality in the three preceding years has been calculated.

It appears from this table, if the mortality in the year ending 30th June, 1839, be compared with that of the two following years, that the increase in these two years, to which I have before adverted, fell upon the young and aged; the mortality of persons between the ages of 20 and 60 years fluctuated very little in the four years. The mortality in the metropolis at different ages is given for the year in which the census was taken, 1841. * * * * *

The marriage registers have afforded a test of the state of education, with reference to writing. The simplicity of this test is one of its chief recommendations; the parties are neither asked whether they can write or read, nor formally requested to write; but sign the marriage registers with their name or their mark in attesting the marriage, and the tables show the proportion who signed with marks. The parties who marry are on an average about 25 years of age; so the test shows the state of education ten or twenty years ago, and the subsequent inducements to the retaining of the information and skill then acquired.

It appears from the average of three years that 33 men in 100, and 49 women in 100 signed with marks; it is, therefore, probable that only 60 men and 51 women in 100 can write their own names.

There is a slight increase in the proportion of men who wrote their names.

The table in which the divisions and counties are arranged according to the proportion of men married, who wrote their names, shows that there are great differences in the state of education in different counties. Thus of 100 men married in Cumberland, only 16 signed the register with marks, 19 in Westmoreland, 19 in Northumberland, 19 in the east riding of York, 23 in the north riding, and 46 in Cambridgeshire, 46 in Worcestershire, 47 in Suffolk, 47 in Essex, 52 in Bedfordshire. It may be worth while to inquire into the systems of education which lead to such different results in these counties; for the differences of intellect, habits, and occupations can scarcely account for the remarkable fact, that 84 in 100 men can write in Cumberland, 81 in the east riding of York, and only 54 in 100 in Cambridgeshire, and 48 in 100 in Bedfordshire. So far as writing implies education, the relative education of men and women varies to a great extent in the several counties. * * * *

I have the honour to be, Sir, your faithful Servant,

GEORGE GRAHAM.

Notice of a Man with three Testicles.—The subject of the present notice, William Howard, an Englishman by birth, and aged about 20 years, was brought before me at this station on the 28th ultimo (September), as a recruit for the 35th Regiment of Foot. On looking at him in a state of nudity, as is usual on such occasions, my attention was at once attracted by the appearance of the scrotum, which seemed fuller and larger on the right side than on the left. A minute examination of the part was in consequence made, and the following facts, carefully ascertained, were noted down upon the spot:—The scrotum was not at all pendulous, but drawn up and corrugated as in a healthy man, so that the difference in size and form, between the two sides, was very striking. On applying the hand to the part, one testicle was found in its proper place on the left side of the raphè. In size, and form, and feeling also, this testicle was perfectly natural, and may be considered, therefore, as a standard wherewith to compare the others. On the right side of the raphè, and on the same level as the former, another testicle was found, in all respects perfectly natural, and similar to that on the left side; and of which, therefore, it may be considered as the proper counterpart. So far, all was perfectly regular; but on this side of the scrotum also (the right), another body was now felt, so similar to the other two just noticed, in size, in form, in feeling, and in consistence, as to leave no doubt of its being a third testicle. This body was situated within the scrotum—between the groin and the proper testicle of this side—with which, however, it did not seem to be in immediate contact, but to be suspended, as it were, by a shorter cord, or hung up in a separate sac; in fact, it seemed as if it had dropped from the abdomen after the other, but had not been permitted to fall so low in the scrotum as to touch it. In consequence of this arrangement, the lower testicle was not at all pressed upon by the upper. On the left side

the spermatic cord was perfectly natural in all respects, and was easily traced from the groin to the testicle to which it belonged. On the right side, however, the cord was much thicker than natural at its upper part, where in fact it consisted of two cords, one of which was distinctly traced into the upper testicle on this side, and the other, much longer, into the lower testicle. And it is to be particularly noted that in each of those parts, as well as in the cord on the left side, the hard spermatic vessel (vas deferens), could be distinctly felt, like a piece of whipcord between the fingers. The three testicles, therefore, were to all appearance perfect and similar to each other.

The penis was well formed, and all the parts were fully developed, extremely dark, and well furnished with black hair; in fact, there was about the man every indication of vigour and efficiency, so far as the parts of generation were concerned, and in all other respects, he presented the appearance of a strong, active, well made man; his height was sixty-nine inches, and the circumference of his chest thirty-five. He was himself perfectly aware of the existence of the third testicle, which had occupied, he said, its present situation as long as he could remember, and had never caused him any inconvenience. I may add there was no laxity of the inguinal ring on either side, nor any other appearance of local disease.

Anxious to verify the actual state of this man in the most satisfactory manner, I had him brought before me again on the following day, and again examined him minutely in the presence and with the assistance of Dr. Colclough, Assistant-Surgeon, 3rd Dragoon Guards, now in garrison here. At this examination every particular of the foregoing detail was investigated anew and fully confirmed, and the convictien was thus, I may say, forced upon our minds, that we had before us the singular spectacle of a man with three testicles.*

Similar cases to the preceding have, I am aware, been seen and recorded by other persons, but having no books here to refer to, I cannot venture to make any remark on their peculiarities, or on the comparative rarity of such occurrences; with respect to my own experience, however, I may say, that I have in the course of my life professionally examined many thousands of men and never met with a similar example.

It only remains for me to add, that the man was rejected as a soldier, in consequence of bearing upon his person marks of leeches and cupping; which, together with his general appearance, led to the suspicion that he was a deserter from the service; this, however, he denied, and in the absence of more direct proof he could not be detained.

F. Macann, M.D., *Staff Surgeon.*

Recruiting Depôt, Coventry.
October 15, 1842.

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* Adverting to the symmetrical arrangement of the body, I think it very probable that in this and other similar cases, a fourth testicle may exist within the abdomen.

On an Accident which occurred to a Diver whilst at work on the Wreck of the Royal George.

TO SIR WILLIAM BURNETT, K. C. H., &c. &c.

Royal Hospital at Haslar, 8th August, 1842.

Sir,—John Williams, private, Royal Sappers and Miners, aged 26, of great strength and activity, but addicted to habits of intemperance, has been employed during the last two summers on the wreck of the Royal George at Spithead, as a diver, and is considered one of the most expert workmen. On the morning of the 11th ult., clothed in his submarine armour, he was engaged at the bottom of the sea, at a depth of 80 feet from its surface, in fastening an iron chain round a block of wood, that was imbedded in the stiff mud; which task, after an hour's labour, he had just completed, when the flexible tube that supplied him with air suddenly burst above water, with a loud hissing noise, which was distinctly heard at the distance of fifty fathoms.

While the divers are employed in their laborious search under water, the utmost vigilance is exercised by those on the deck of the hulk, to prevent or remedy anything that might endanger the diver's life, or interrupt his operations. The persons, accordingly, who were stationed at the air-tube, and life-line, by which the divers are assisted in their ascent, immediately perceived the accident that had happened, and one of them closed the hole in the tube with his hand.—Williams was promptly hauled up, but his armour got entangled in the heavy rope-ladder, by which the divers descend, and he and it were pulled up together, in the space of about a minute and a half, from the occurrence of the accident.

On removing the helmet from his head, blood was seen running in a stream from his ears, nose, and mouth. His face and neck were swollen and discoloured; he looked faint, but was sensible. In this state he was conveyed to the hospital, where he arrived in an hour after the accident. His face then was one mass of lividity; his neck was excessively swollen, bloated, and suffused with livid coloured blood. Dark patches of ecchymosis that did not coalesce existed over the clavicle and shoulders, with intervening spaces of skin of the natural colour. The lower part of the neck, which had been covered with the flannel and India-rubber dress, was mottled black and white; the dark ecchymosis being raised in lines, with slight streaks of white skin interposed. The livid discoloration of the face extended upwards to, but did not pervade the hairy scalp, where it terminated abruptly; nor were any spots seen below that part of the chest which was covered by the helmet. The lining membrane of the cheeks, under the tongue, over the fauces and pharynx, as far as the eye could reach, but especially over the tonsils, was black with ecchymosis. The conjunctivæ where they are uncovered by the eyelids, and particularly round the margin of the corneæ, were turgid with black blood. He vomited some blood before he reached the hospital, and he afterwards made occasional efforts to vomit, apparently from the accumulation of blood in the fauces, which blood he now and then expectorated. The hæmorrhage had ceased from the nose and ears, which were still

covered with clotted blood. He was perfectly sensible, but seemed drowsy; pulse 76, of natural strength; breathing interrupted by frequent, deep, involuntary sighs.

Lieutenant Hutchinson, who was present when the accident happened, and who accompanied Williams to the hospital, said that the swelling of the face and neck had much increased, and the lividity had much deepened, during the hour that had elapsed since he left the hulk.

In the course of the same day, the lividity of the nose and point of the chin vanished, and those parts resumed their natural colour. The colour of the face too became much paler, in proportion as the vessels recovered their freedom and diameter; but there were large patches of extravasated blood in the eyes, mouth, face and neck, which could only be removed by the tedious process of absorption. On his admission, warmth was applied to his extremities; some warm tea was given him, which he swallowed with the greatest difficulty; he had a turpentine enema; and in the course of the day twenty ounces of blood were taken from the arm. The following morning a senna draught was prescribed, which has been occasionally given since. He has complained of occasional headach and dimness of sight, from which he is now free. The swelling and ecchymosis of the face and neck have daily diminished; and these parts have now attained their natural size and colour, showing that they were swollen, on his admission, to twice their natural size. The ecchymoses under the conjunctivæ were very tardily absorbed, and minute clots were visible for three weeks around the union of the cornea and sclerotic coat.

A similar accident occurred, under the same circumstances, about twelve months ago, to Private Roderick Cameron, of the same corps, whose head, neck, and eyes were discoloured in the same way; an account of which has been read to the British Association by Dr. Richardson. When Cameron was hauled up on the hulk's deck, he had lost all consciousness, and was in a state of apparent asphyxia, from which he soon recovered. A little blood only escaped from his nose; and none from his ears or mouth. At the expiration of a month, the ecchymoses under the conjunctivæ, that remained the longest, had disappeared; and undaunted by the perilous accident which had jeopardized his life, he returned to his work as a diver, which occupation he still fearlessly follows. Williams too is undismayed by his frightful accident, and he has resolutely returned to pursue his adventurous life; feeling confident that the prudent application of those precautions which are now well known, will secure him from danger.

An accident somewhat analogous, as far as I can make out the facts, occurred to a diver at the wreck of H. M. S. Thetes, in South America, who, with a companion, had descended into a diving-bell. In this case, also, the air-tube burst, and one of the men immediately extricated himself from the diving-bell, and rose to the surface of the water unhurt. The other man, by some means, got entangled, and was some time in freeing himself from the bell, which he at length accomplished by the aid of his companion, who again descended for the purpose. When he reached the surface of the water, he was much

exhausted, and his face and body were blackened with ecchymosis down to the *waist*. This discoloration gradually went off in the course of a month, the blackness of the balls of the eyes being the last to disappear.

These curious and strikingly similar effects of the same kind of accident at Spithead, seem to arise from the sudden removal of the compressed air, and the consequent exertion of the pressure of the superincumbent water on those parts of the body which are not covered by the unyielding helmet. It is calculated, in round numbers, that the pressure of the water on Williams' body, at the depth of his submersion, at the time of the accident, was nearly equal to the weight of three atmospheres, which pressure was counteracted, and the equilibrium preserved, by throwing air through a forcing-pump, of great power, along a flexible tube into his helmet. This supply of air is steadily kept up, by constant regulated pumping, during the whole time the diver is under water; and until the centre lens of the helmet is opened on deck. The quantity of air thrown along the tube into the helmet, far exceeds what is required to sustain easy respiration and the equilibrium of pressure; but no harm can result from any additional quantity of air that may be forced in; inasmuch as the superfluous air readily escapes into the sea, by a valve in the helmet, and is seen constantly bubbling up on the surface of the water. When the tube burst, and the air escaped from the helmet, this equilibrium of pressure and resistance was destroyed. The head was protected by the strong helmet, which did not collapse, from the pressure of the circumambient water, which now acted on the rest of the body with a force equal to two atmospheres, and produced a feeling, as he expressed it, as if he had been crushed to pieces by his dress. The blood thus given from the extremities and from those parts of the body that were not covered by the helmet, were forced into the vessels of the head and neck (as it is into a part of the skin placed under a cupping-glass) some of which blood remained in the vessels and disappeared in a few hours after the accident; but a large portion was extravasated in the loose textures into which it had been forcibly driven.

Six divers have been employed, during the last three summers, on the wreck of the Royal George. They have now nearly succeeded in clearing it away, and the anchorage has been, in part, restored to its former security, with fewer accidents, and none of them fatal, than it is likely would have occurred in similar operations, during the same space, above water. The value and importance of these operations and the extent to which they may be applied in recovering treasure, or in the destruction of important works on an enemy's coast, are still imperfectly understood, but General Paisley has satisfactorily established that these sub-aqueous operations may be accomplished at any ordinary depth, with ease and safety, by men who are not professed divers, and who have not been trained up from their infancy to the art. The divers engaged at the Royal George have been selected from the corps of Royal Sappers and Miners, whose characters and abilities as steady men and good workmen were known to their of-

ficers: but only some of those so selected have become good divers, for the effects of protracted submersion are so different in different individuals that it is not every man who can follow the perilous life of a diver. Many experience intense pain in the ears and bleeding at the nose during their descent; and Lieut. Hutchinson, who ably conducts the operations on the Royal George, always experiences these sensations, and he has never been able to remain under water for any length of time. Those who are accustomed to dive successfully, never suffer any such inconvenience, and I cannot learn that they experience any very marked uneasy sensation, unless an occasional sense of nausea, or distention at the stomach, headach, and rheumatism; but they all agree that they are much weakened and wasted by the exertion, and as they express it, are not the men they were when they began the occupation. I have not had sufficient experience to determine whether it renders them permanently unhealthy or short-lived.

The diving season commences in May and ends in October, and the divers are usually employed eight or ten hours in the twenty-four. No scene can be more striking, than the activity that pervades the Hulk during the immersion of the divers. The busy groups of pumpers, on whose regulated exertions the lives of the divers depend; the deep groanings of the air-pumps; the anxious care that the men stationed over the hulk's side, with the air-hose and life-line in their hands, bestow on the preconcerted signals, by which the divers communicate their wants with the precision of speech; the turbulent agitation of active ebullition, that is occasioned by the forced escape of the compressed air through the sea; the dreadful plunge and rapid disappearance of the enormous and unwieldly mass in this boiling cauldron; the eager look of expectation and vague apprehension, with which the spectators gaze on the whole process, exceed in interest any thing I have ever witnessed.

The divers remain under water, according to the nature of their work, from half an hour to three hours; and although, in order to accelerate their descent, they are heavily laden, with ponderous shoes and large leaden weights on their shoulders, constituting a dress of a hundred and thirty pounds weight, they move about nimbly at the bottom of the sea, and feel and work as lightly as if they had nothing on their shoulders and feet.

Mr. Richard Tilston has kindly made a very correct drawing of Williams's appearance when he was brought to the hospital; to which he has added a faithful picture of him, in his working dress, at the time the accident occurred, in order to convey a notion of his mode of groping his way under water, with his pricker in one hand and dog in the other. In these sub-marine expeditions, the divers frequently encounter each other. On one occasion, three of them, from two different hulks, met, joined hands in a circle, and gave three hearty cheers at the triumph of the art of diving. On other occasions, however, their meetings are less friendly; disputes arise as to their claims to particular logs of wood, quarrels and sparring ensue, in which their large iron prickers play the part of single-sticks.

Nothing can exceed the spirit and industry with which these operations have been conducted, or the laudable emulation displayed by the workmen to excel each other in the quantity of work they severally perform; and nothing has occurred to damp their ardour until lately, when Corporal Jones, one of the most courageous and useful divers met at the foot of his ladder a dead body, which produced such a shock, that he immediately ascended in the greatest possible alarm; and spoke as if he had encountered a supernatural being. Unsuccessful attempts were made to rake the body up from below; but a few nights afterwards it was brought up by Corporal Harris, the most intelligent and persevering of the corps, on his pricker, without his knowing what he had got hold of. His consternation when he reached the surface and found that it was a dead body, was so great, that he could not go down again, and he was replaced by another diver, who not having felt his horror, was not unwilling to descend.

The divers are employed four hours at a time, during the slack tide of low water, and in that space they usually descend about four times. On their ascent after an hour's submersion, they appeared to me, while they were leaning against the hulk's side, to be pale, languid and exhausted, though they did not admit that they were fatigued. When they reach the top of the ladder, the centre lens is unscrewed, their ponderous helmet is taken off, and they are generally allowed ten minutes to recruit, while the wood they may have collected is drawn up by a crane. They can only work two hours at the slack tide of high water, in consequence of the strength with which the tide ebbs and flows at that period, which, they say, begins earlier and runs with much more rapidity at the bottom than at the surface of the sea, and which would carry them off their legs. They are also sometimes interrupted by storms, that would prevent their signals from being understood by those who attend the air-pipes and life-lines on the hulk's deck.

The divers are clothed in flannel dresses, that fit closely, which retain the warmth of the body and prevent the chill that might be produced by the soaking of the water through the seams of the India rubber dress. This dress is protected on the outside by a canvass covering, from any injury it might sustain by rubbing against the nails or ragged pieces of the wreck.

We know little of the effects produced by the respiration of compressed air, but the divers find that they can breathe easily at the bottom of the sea; they can sing readily, but cannot whistle. They converse with each other, by shouting at the top of their voice, which they hear in a whisper.

Each diver is paid, besides his regimental day pay of one shilling and three-pence, two shillings a tide, working three tides in the twenty-four hours.

Since the occurrence of Williams's accident, each diver has been furnished with a safety-valve, placed between the end of the air-pipe and the helmet. The air being forced in from the pump, opens the valve, and passes into the dress, but the moment this pressure is re-

moved, the valve closes and prevents any air in the helmet returning through the pipe. This contrivance, however, I fear, in the event of an accident, would only substitute suffocation for that of being squeezed to death.

I have the honour to be, Sir, your most obedient Servant,

JOHN LIDDELL.

—*Med. Chir. Rev.*

On the Diagnosis of Granular Degeneration of the Kidney, by Dr. C. Haller, Vienna.—This paper consists in the main of two cases, in one of which all the symptons of granular degeneration were present, without more than a hyperæmic state of the kidneys having been discovered after death; whilst, in the other case, not one of the symptoms generally held indicative of the granular degeneration, were observed, although the *post mortem* dissection showed the kidneys in the third stage of this disease.

A man, 58 years of age, had long suffered from shortness of breath, palpitation, and dyspepsia. The patient generally passed the night in the sitting posture, and in great distress. Percussion indicated enlargement of the heart, and auscultation proclaimed insufficiency of the mitral valve, and roughening of the aorta. The eyelids were puffed, and the ancles swelled, in the evening especially. The urine was in ordinary quantity, of a pale yellow colour, and without a trace of albumen. The patient, for some days after his reception at the hospital, complained of precordial pains, and had repeated attacks of epistaxis; ten days after his reception he had a severe asthmatic attack; difficulty of breathing, palpitation, intermitting pulse, cold skin, great feeling of distress, &c. The lungs, on auscultation, were found healthy; the impulse of the heart, heard widely, was but weak; at the root of the heart, and along the aorta, at the moment of the stystole, there was a murmur, masking the second sound. Eighteen days after his entrance, the patient had another severe attack, and the infiltration increased greatly; the urine was abundant, but turbid, the respiration free. Three days after this he had a third attack, the urine scantier and darker; by and by the patient complained of lancinating pains in the region of the kidneys; the urine was passed with difficulty, and always in smaller and smaller quantity; it was of a dark red colour, frothy, and, when treated with nitric acid, and boiled, was found to contain a large proportion of albumen. Next day, the patient was taken with sickness and vomiting, and then he became comatose; no urine was secreted, the bladder was empty. Next day, a little urine was passed; it was like beer, and contained albumen. Matters went on from bad to worse, till the patient (having recovered his consciousness) died. In the ventricles of the brain, from two to three ounces of serum were found; the arteries of the brain generally contained white bony plates in their coats. The heart was about twice its normal size; the walls of the left ventricle were one inch in thickness; in the mitral valve, were many bony plates; the other valves

were natural; in the ascending aorta numerous and large bony plates existed, the internal surface was rough, uneven, and sinuous. The liver was large and congested, as was the spleen; the kidneys were firm and congested; there was no trace of granulations in their cortical substance; the infundibula were collapsed, the ureters and bladder empty.

Case II.—A man, aged 28, who had not previously been ill, complained of sleeplessness, dyspnœa, cough, and diminished secretion of urine. His face and whole body were leuco-phlegmatic and infiltrated; the skin was dry; the respiration difficult; cough with mucous expectoration; the urine scanty, of a deep red; bowels relaxed; pulse slow and full. Percussion and auscultation,—posteriorly, the respiratory murmur was diminished; superiorly and anteriorly, there was moist crepitation; inferiorly, and posteriorly, the murmur was absent. Impulse of the heart, by reason of the œdema, was diminished. The urine, treated with nitric acid, effervesced, but, neither with this acid, nor after boiling, did it let fall any albuminous precipitate. In the next following days, the anasarca went on increasing; the urine, secreted in very small quantity, was nearly black; the diarrhœa continued. By and by, auscultation proclaimed œdema of the lungs to have taken place; the patient was brought to extremities by dyspnœa; an attempt to evacuate the water from the abdomen failed, and under continuing diarrhœa, stupor, delirium, and repeated attacks of syncope, he sank asphyxiated. The treatment consisted in the exhibition of infusion of fennel with acetate of potash and oxymel of squills, digitalis, calomel, juniper, &c.

Dissection.—The body was highly anasarcous. The brain was firm; there were a few drachms of serum under the arachnoid at the base. The pleuræ contained two or three ounces of serum. The lungs were œdematous superiorly, and infiltrated inferiorly. The left ventricle of the heart was somewhat hypertrophied, its cavity diminished; the valvular apparatus was every where perfect. In the abdomen were six quarts of serum. The liver was large, finely granular with predominating yellow substance, not fatty. Both kidneys were remarkably enlarged, and altered in a very high degree in the manner indicated by Bright; they presented the degeneration in the third form, as described by Rokitansky; the calices and ureters were collapsed and empty; the bladder was small and empty.—*Edin. Monthly Journal.*

Statistical Table of the Cases of Diseases of the Mamma and Testicle, operated on in the Hôtel Dieu of Paris, by M. Roux, from 1836 *to* 1840, *inclusive*, by MM. Maunoury and Thore.—The Authors, in drawing up this table, considering the great analogy which exists between the diseases of the mamma and testicle, have followed the plan adopted by Sir A. Cooper, in associating them together.

Operations on the Mamma.			Operations on the Testicle.		
Years.	Operations.	Result.	Years.	Operations.	Result.
1836	19	13 left the hospital.* 6 deaths.	1836	5	5 left the hospital.
1837	20	19 left the hospital. 1 death.	1837	7	5 left the hospital. 2 deaths.
1838	17	13 left the hospital. 4 deaths.	1838	6	4 left the hospital. 2 deaths.
1839	21	18 left the hospital. 3 deaths.	1839	4	4 left the hospital.
1840	18	12 left the hospital. 6 deaths.	1840	7	6 left the hospital. 1 death.
Total	95	75 left the hospital. 20 deaths.	Total	29	24 left the hospital. 5 deaths.

This table gives one death in every $4\frac{3}{4}$ patients operated on for diseases of the mamma; and one in $4\frac{1}{4}$, in those for diseases of the testicle.

With regard to the number of operations, we are struck with the enormous difference between the two organs, and there are two reasons by which we may account for it :—1st, In the mamma, there are many tumours, as fibrous, lymphatic, &c., which do not attack the gland itself, but exist only on its surface, and between its lobules, while, at the same time, they are confounded with the real cases of degeneration, and are consequently placed under that head. In the testicle, however, it is different ; its organic alterations occur in the organ itself, and are not so easily mistaken as in the mamma, while an operation is only had recourse to for degeneration of the gland. 2nd, As soon as a tumour makes its appearance in the mamma, the patient becomes alarmed, and consults a surgeon, who, for fear of future consequences, recommends an operation, which is almost always acceded to, whereas, in the testicle an immediate operation is only performed in cases of cancer, and not urged in the other diseases to which it is subject, until a long treatment has been followed out; and even then, only after it has become useless to the patient, and perhaps prejudicial to the health. Notwithstanding this, however, diseases of the mamma are of much more frequent occurrence than those of the testicle, from the more active state of the generative functions in women than in men. How often do we find diseases of the breast produced from some disturbing cause in menstruation, pregnancy, or the puerperal state, &c. But with the exception of the difference of a trifling fraction, the mortality in them both is the same. The period at which a fatal event, in the above cases, took place, was as follows:

* MM. M. and T. after taking into consideration the number of cases which leave the hospital, and return at some future period, either to die or be again operated on, have adopted the above term, instead of that of cure, as expressing more correctly the state of the patients at the time of their dismissal.

For Operations on the Mamma.		For Operations on the Testicle.	
From the 5th to the 10th day,	4 deaths.	During the first six days,	3 deaths.
... 10th ... 15th	7 ...	... the 9th day,	1 ...
... 20th ... 30th	4 ...	Two months after,	1 ...
... one to two months,	5 ...		
Total,	20 deaths.	Total,	5

Of the operations performed on the mamma, four were in males, and ninety-one in females. Seventy-two of these were married or widows, and nineteen were unmarried. The authors can give no information about the number of children each had, nor whether those who were mothers, had nursed their offspring. The disease appeared at the following ages:—

25 were attacked from 18 to 40 years of age (menstrual period).
43 ... 40 to 50 ... (critical period).
23 ... 50 to 70 (period of decline and cessation).

Of those who died, two belonged to the first class, nine to the second, and nine to the third. From this we find that the critical period predisposes most to tumours of the breast, and that according as the age is advanced the mortality is greater.

Of the operations performed for diseases of the testicle,—

10 were from 18 to 30 years of age,
10 ... 30 to 40 ...
9 ... 40 to 70 ...

which shews that the period of the greatest frequency of disease in the testicle is during adult life, and not, as in women, when the generative functions begin to fail. Thus we may say that cancer is most frequent in the eye in youth, in the testicle in adult age, and in the mucous membranes in the decline of life.

Several cases of disease, both of the mamma and testicle, are given, but it is unnecessary for us to report them, as they present nothing very interesting.—Abridged from *Gazette Méd. de Paris*, 17th Dec. 1842—and *Edinb. Monthly Journal.*

A peculiar Displacement of the Bones of the Fore-arm, by John Gardner, Surgeon.—No deviation from a state of health, however trivial, no disturbance of the normal state of the human body, however slight, can reasonably be disregarded in the present state of science. So far from having attained to the knowledge necessary to a perfected system of nature, we are still but collecting materials, ascertaining facts, and sifting from them the chaff of mere opinions, gathering and laying up stores to benefit future philosophy. If greater success has attended our researches than the ancients achieved, it has arisen mainly from the rigid scrutiny given by the moderns to the minute phenomena of nature, which our predecessors thought it beneath them to regard. When the Greek saw a feather fly toward the piece of amber to which a child had applied friction, he little thought that beneath that simple phenomena lay hid one of the mightiest powers in nature. The prejudice which would have led him to turn in contempt from one who should devote his life to the elucidation of

this simple natural fact is not yet extinct in the human mind. We often hear the enthusiasm of the naturalist despised or ridiculed, when exulting in the addition of an undescribed insect or plant to our catalogues, hoping thus to connect his name inseparably to the records of his favourite pursuit. Would that we could make the scorner understand, that an element may thus have been supplied essential to the progress of our systems, a new principle of greater importance to human happiness than the discovery of a star, and that he might himself occupy a well-spent life in unfolding all the relations borne by that living atom or that unheeded moss to the great system of living beings which fills and animates our world.

The discovery which is the subject of these few pages may have no very extensive relation to other truths, or even to a system of surgical science, but the manner of every dislocation to which any part of the human body is subject, inasmuch as it must depend upon the primary laws of its construction, may reveal a profound meaning, and the present instance appears to be of sufficient importance to merit, for many reasons, the notice of the surgeon.

The avocation of a general practitioner in the metropolis being coincident with that of physician, he rarely has an opportunity of making any discovery in surgery; I am therefore desirous that the dislocation described in these pages should not escape the attention of the compiler of systems and cyclopædias. This is my excuse for republishing in the present form my communication to a medical journal—now out of print—in which the lesion in question was first recorded, the notices that paper obtained from the profession, and such remarks as may serve to establish the accuracy of my original observation.

The following letter appeared in the London Medical Gazette, Sept. 1837:

"*On an undescribed Displacement of the Bones of the Fore-Arm in Children.*

"TO THE EDITOR OF THE MEDICAL GAZETTE.

"SIR,—There is an accident of very frequent occurrence, happening to children from the time when they are just beginning to walk, to the age of from three to four years. A parent or servant is leading a child, or it is supporting itself by its hand—a sudden slip occurs—a slight crack is heard—the child screams—and upon examination is found unable to use its hand; the arm hangs powerless by its side, or is supported by the other hand, and every attempt to move it is attended with considerable pain. A surgeon is summoned, and on the first aspect supposes that either the clavicle is fractured, or the shoulder-joint dislocated. But when, on a careful examination, this is found not to be the case, and the non-existence of either dislocation or fracture is satisfactorily ascertained, he believes it to be a mere bruise, places the arm in a sling, and keeps it bathed with cold lotions. After some time, whilst dressing or undressing the child, or on some sudden movement, another fall, or pull upon the arm, a slight crack is again heard, and to the great surprise of the parent the hand

is forthwith used, and is found to be quite well. I have witnessed this frequently, surgeons not being aware of the displacement which has taken place. The only consequence, however, has been the unnecessary suffering of the child, in some cases extending to several days, and the longer in proportion to the care and tenderness exercised in its management.

"The accident is produced by a pull upon the arm at the hand, simultaneously with a sudden twist; the arm immediately hangs powerless, and its rotation cannot be performed without producing great pain. The displacement consists in the tubercle of the radius, to which the tendon of the biceps flexor cubiti is attached, slipping over the edge of the ulna, and being retained there. I have never seen this displacement in adults; probably the laxity of the ligaments permits it only in children, and most frequently in very young children.

"When a child is presented to me under these circumstances, after carefully ascertaining that there is no fracture, either of the clavicle or bones of the arm, and no other dislocation, and the existence of this displacement being evident, I grasp the upper arm firmly in one hand, and with the other bring the fore-arm tightly supine, and suddenly bending the fore-arm upon the upper, the bones slip into their proper places; a slight crack is heard, and the child is well, and can at once use his hand.

"Your obedient Servant,
"John Gardner.

"49, *Great Portland-street,*
"*August* 30, 1837."

On the publication of this paper, several gentlemen in large practice intimated to me that they had seen such a dislocation, and were gratified by the fidelity of the description,—Mr. James Russell, of Broad-street, Golden-square; Mr. Gaskell, of Chelsea; and my estimable friend, now alas! no more, Alexander Farquhar, of Cadogan-place. But Mr. Guthrie, of the Westminster Hospital, called upon and professed himself unacquainted with the lesion in question, desiring me, should I meet with a case, to let him see it. No notice, so far as I am aware, was taken of the matter by any surgical author until 1839, when the Provincial Medical Association, having deputed Messrs. Newnham, W. Wickham, and Salter, to make a retrospect of the progress of surgical literature for the past year, the result of their labours being afterwards published, there occurs in it the following passage, p. 18:

"Though not strictly within the period limited by the Society for the Surgical Report, we take leave to allude to a partial dislocation of the upper extremity of the radius, which was first recorded in the September number of the Medical Gazette for the year 1837, by Mr. Gardner. We are desirous to refer to this accident, firstly, from the belief that it is not generally recognized or understood; and, secondly, that one of the reporters has long been familiar with it, and has been in the habit for many years of pointing it out to his pupils. It invariably occurs in *young* children, and is occasioned mostly by servants and others suddenly pulling the child by the hand, or so lifting it from

the ground. After the occurrence of the accident, the arm hangs uselessly by the side, with the *hand prone*. Mr. Gardner has given a clear account of this lesion, both as to the manner in which it takes place, and the subsequent appearance of the limb; but whether he be correct in stating it to consist in the tubercle of the radius slipping over the edge of the ulna, we think doubtful. All that we have found necessary for removing the displacement is simply to rotate the radius; and if while this is done with one hand, the thumb of the other be firmly placed on the head of the bone, a slight crepitating jar will be felt; and at the same time a noise is heard similar to that noticed in the reduction of other luxations. The after-treatment consists in placing the arm in a sling for a few days, and applying a roller, kept moist with an evaporating lotion, around the elbow-joint."

The work from which this quotation is taken was reviewed at some length in the Medico-Chirurgical Review, No. 62, October, 1839, and upon this point the Reviewer observes, "We are much inclined to think the reporter mistaken in his notion of the nature of the accident which he describes. The accident itself must be familiar to all surgeons. We have always looked on it as a separation of the head of the radius from the remainder of the bone at the epiphytic junction. A very little reflection must show that dislocation at so early an age is exceedingly unlikely, particularly in the case of the head of the radius embraced in its strong orbicular ligament. But the epiphytic cartilage is very likely to give way."

It must be acknowledged by every one conversant with medical periodical literature, that the Medico-Chirurgical Review is pre-eminent in assumption, and foremost in endeavouring to discourage all who do not belong to a certain class, and yet presume to advance the science.* Its qualities are abundantly displayed in this brief passage. To say, "the accident itself must be familiar to all surgeons," was beside the purpose. The question was, had it ever found a place in surgical literature? Many floating facts may be familiar to practitioners, and yet fail to be recorded, and become for a time lost; some credit is therefore always due to him who is the first to fix a truth in print. But the accident in question was *not* familiar to all surgeons. We have already seen that Mr. Guthrie, a name second to none as surgeon and author, could acknowledge he did not know it. The following incident, also, which occurred September, 1839, a few weeks before I saw the Medico-Chirurgical, shows us another metropolitan hospital surgeon and lecturer, who did not know the dislocation in question.

A child was brought to me, said to have fractured its arm. The accident was occasioned by a violent drag on the wrist, when something was heard to crack. Upon a careful examination I ascertained the nature of the case, and purposed to take it to Mr. Guthrie; but recollecting that Mr. Hale Thompson, his colleague at the Westminster Hospital, resided near me, I took the child to him, and requested him to examine the state of the limb. After a full examination,

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* We beg to disclaim any participation in the above sentiment.—Eds.

during which the child was suffering great pain, Mr. Thompson declared there was no dislocation; but, to account for the pain, he said the ligaments of the wrist joint were strained, perhaps ruptured. I then wished to show him the nature of the accident, and reduce the dislocation; but he refused to permit violence (as he said) to be used to an injured limb in his house, but recommended splints, bandages, cold lotions, &c., and sent the child away in severe pain. I was extremely indignant at this conduct, and proceeding home with the child, I reduced the dislocation in a second, and wrote a note to Mr. Thompson, informing him of the fact. He immediately waited on me, and we visited the child, and he found the arm restored, perfectly well, which the little patient expressed by flourishing the arm over his head, and exclaiming that Mr. Gardner had made it well in one minute! Mr. Thompson admitted his error, and made a suitable apology to me and explanation to the patient's friends.

The Medico-Chirurgical Reviewer, if I do not mistake, is also a teacher of surgery; did he ever see and recognize the lesion I have described? His own remarks furnish conclusive evidence that the accident in question is not familiar to him. He suggests the hypothesis "of a separation of the head of the bone at the epiphytic junction." This I will venture to assert was suggested, not by seeing the accident, but by the passage in the retrospect. The authors of that work say, "it invariably occurs in young children"—printing the word *young* in Italics. They also speak of after treatment (in the last sentence) to be pursued for a few days.

The child, whose case I have just related, was five years old. When the reduction of the dislocation is effected, the cure is so complete that no after treatment whatever will be required. I have usually recommended the limb to be kept quiet, and a cold spirit lotion applied around the joint; but I have always found it neglected after an hour or two by the patients, and have never seen the neglect attended by any ill consequences. "The separation of the head of the radius from the remainder of the bone at the epiphytic junction," would be a far more serious accident, and would require a long continued appliance to retain the parts in situ. The reviewer must excuse me, if I pronounce his opinion to be a mere guess, without his knowing anything practically of the matter.

What is the nature of the displacement in question? The reporters of the Retrospect speak of it only as a partial dislocation of the upper end of the *radius*, without expressing an opinion as to its precise mechanism, except that they regard my suggestion on this point as 'doubtful.' I confess I think no better of it myself. May it be that the simultaneous drag and twist upon the arm stretches the orbicular ligament, and brings the prominent edge of the radius upon the protuberance of the os brachii, which forms the articulation, and on which the radius rotates?

The accident is not of a very serious nature; accident often again restores the bone to its place, but in the meantime the pain to the patient is severe, and it is the more protracted the more that care is used to keep the limb quiet, under the impression that it is a severe sprain. Splints and bandages keep the bone out of its place; and I

could relate several instances of surgeons sorely puzzled by the simple occurrences arising out of this case of dislocation.

Cerebral Softening.—Dr. Durand Fardel has published several cases to prove the curability of cerebral ramollissement, which he considers to be due in every case to local or general vascular congestion of the brain, a conclusion he draws from the consideration of the symptoms and the anatomical lesions proper to the acute ramollissement; the consecutive effects of the chronic disease also corresponding to the results of inflammatory action developed after primitive vascular congestion.

Cerebral ramollissement, according to Dr. Fardel, is curable at two different periods of its existence; at its commencement, when the tissue is not so disorganized as to prevent its return to the normal state, nor the cerebral functions to their primitive integrity; and again at a later period, when the disorganization of the nervous pulp is arrested, and the part undergoes a process of induration or cicatrization analogous to the mode of cure of apoplectic clots. In the first case, a complete removal of the anatomical lesion, and of the symptoms which indicate its presence, may be effected; in the second, the pathological change will continue, as will often also a certain degree of alteration in the encephalic functions. In the last-named cases, the term cure is applicable in the same manner as it is under similar circumstances, in cases of cerebral hæmorrhage.

In support of these views, Dr. Fardel has placed several cases on record in which the symptoms during life corresponded with those of ramollissement of the substance of the brain. The first case occurred in the person of a woman, forty-eight years of age, who had always passed a very active, but poverty-stricken existence. The disease commenced in her with giddiness, severe and continuous headaches, and occasional loss of consciousness, which was sometimes attended with want of muscular power in the limbs. From these attacks she generally speedily recovered, but they left a degree of weakness behind them. In the commencement of January, 1842, however, a severe attack of giddiness, unaccompanied with insensibility, was followed by permanent and rapidly increasing paralysis of the left side. When Dr. Fardel saw her, the left arm was perfectly paralysed, but there was still some slight motion in the lower extremity, which was the seat of severe pain; the mouth and eyes were drawn permanently to the right side; the tongue could be protruded straight; speech was difficult, and the voice monotonous; at times the patient seemed to hesitate for words, and be unable to express her thoughts; the irides were scarcely influenced by light; the right side was totally unaffected, and the general functions were performed correctly.

This attack had been coming on for a twelvemonth previous to this development in all its violence. The treatment was antiphlogistic and counter-irritant; the repeated methodic application of leeches behind the ears, &c., moderate purgatives, blisters to the nape of the neck, sinapisms to the wrist, &c., were the measures chiefly employed,

and by their continued use the headaches were removed, the speech and intellect became perfect, the pains in the limbs were dissipated, the paralysis was so far cured, that the patient could walk upwards of a league without much fatigue, and the motions of the left arm were restored to their natural condition, the fingers only remaining weak.

This case Dr. Fardel considers, in the absence of proof of pathological lesion, to be well marked by the symptoms as one of cerebral softening, nor does he think that the persistence of a degree of weakness in the fingers of the previously paralysed limb should prevent its being regarded as an instance of cure of the ramollissement. The nervous pulp was in all probability too far disorganized to admit of its being restored to its normal condition.

The next case recorded is one in which Dr. Fardel states there were signs of former softening arrested by treatment, and afterwards cured by cicatrization. It occurred in the person of a woman, seventy years of age, who died in the Salpêtrière of disease of the heart. A few days previous to her death she showed signs of cerebral affection, such as hallucinations, strange remarks, insomnia, spasmodic twitchings of the forearms and face, and subsultus tendinum, symptoms which Mr. Prus, the physician to the institution where she had been long a resident, stated to have shown themselves several times previously, accompanied by exaltation, delirium, stiffness, and spasmodic action of the limbs without paralysis. Leeches to the neck had generally removed these symptoms in a short time. On examination of the body, there was found acute superficial ramollissement of the convolutions of the brain, which were injected and infiltrated with blood, and covered here and there with small yellow patches; in the cortical substance there were found the remains of chronic ramollissement, consisting in the transformation of the cortical layer in a kind of yellow, thick membrane, covering small cavities with dense greyish vascular parietes, filled with a liquid like milk of lime. These cavities are regarded by the essayist as proofs of cure of chronic softening—that is, of a cure as far as it can be effected, the part being too much diseased to admit of its restoration to its primitive condition.

The third and last case is one where the symptoms of ramollissement were removed by a careful antiphlogistic treatment, leaving a degree of weakness and numbness in the limbs that had been paralysed, with occasional severe pains about the joints, and a sensation of weight, rather than pain, in the head. For these the patient would not submit to further treatment, as she did not like the successors to the physicians at the hospital, under whose care she had been placed.—*Prov. Med. Journal.*

Retro-Pharyngeal Abscess.—The infrequency of a collection of pus in the submucous cellular tissue behind the pharynx, the obscurity of the symptoms, and the danger to life caused by the existence of a retro-pharyngeal abscess, render it a subject of great importance and interest. M. Mondière has collected a series of these cases, drawn from various authors, which may serve to remove in part the obscurity that hangs over the semeiology of this disease. Out of eighteen pa-

tients, eleven were adults, and the remaining seven, children from eleven weeks to four years old. In three cases, the abscess was caused by the existence of an inflammation of the mucous membrane of the pharynx, which had been propagated to the sub-mucous cellular tissue. The retrocession of erysipelas appeared to have produced it in another case; in two cases it seemed to depend on rheumatism, and in one to have been caused by a stricture of the œsophagus just below it. Caries or tubercular disease of the cervical vertebræ is another cause, the abscess being merely symptomatic. Several examples of this have been placed on record, but, in examining the part, the simple erosion of the bone caused by the prolonged contact of the purulent matter must not be mistaken for caries.

The progress of these abscesses is generally acute, the symptom of suffocation, however, not showing itself until the abscess is fully formed. The collection symptomatic of caries must necessarily be chronic in its formation, and nevertheless the dyspnœa and dysphagia come on suddenly, in conformity with the pathological law, that a gradual compression may be exercised with impunity for a long while on organs the most essential to life, no symptoms being produced until the pressure had been carried beyond a certain amount.

The termination of these abscesses is not fatal when they have been recognized and opened early. Death occurred only once out of thirteen cases where the abscess was opened, but if the disease is mistaken, death is almost inevitable, either from suffocation by pressure, or from its bursting into the trachea or chest. Examples are recorded by Messrs. Mott, Manoury, Dariste, Petrunti, and Mondière.

The primary symptoms are, local pain and an injected state of the pharyngeal mucous membrane with or without fever, and followed by difficulty of swallowing or breathing. At the end of a certain time another set of symptoms show themselves, resulting from the formation and accumulation of pus, such as irregular shiverings, œdema on the sides of the neck, more or less tumefaction of the posterior paries of the throat, and threatened suffocation. To these Petrunti adds displacement of the larynx forwards.

The diagnosis would not be attended with difficulty if the surgeon were to think of the possibility of such an abscess forming, and to examine the posterior part of the fauces, as the tumefaction is so well marked. The dyspnœa, however, so closely resembles that of other complaints, that the existence of an abscess may not be suspected.—The complaint it most closely resembles is croup, from which it may be distinguished by the symptoms in croup not being continuous, while they are so in the retro-pharyngeal abscess, although they have an occasional exacerbation. Besides, the difficulty of breathing and the agitation of the patient are increased by pressure on the larynx, which is not the case in croup. The dysphagia also increases at the same time with the dyspnœa. The safest plan, however, is to examine the interior of the throat with the finger, an exploration that should be made in all disease resembling croup or œdema of the glottis.

The only indication with regard to the treatment is to give a speedy exit to the pus, which should be done as soon as fluctuation

is evident, either with a bistoury or pharyngotome. Mr. Fleming uses a trocar that he has had constructed for the occasion, but it has the inconvenience of the opening being liable to close, and thus requires repeated punctures. Dupuytren advises a large incision to be made. When the mouth cannot be opened sufficiently wide for an instrument to be used with safety, it would be advisable to burst the abscess either with the finger or the handle of a spoon, pressing gently at the same time with the thumb and fingers on the side of the neck on a level with the larynx, to prevent the matter spreading laterally; or a pair of scissors may be used, one blade being sharp-pointed and shorter than the other, which should be blunt. The instrument may be passed closed to the back of the pharynx, then the sharp blade separated, thrust into the abscess rather obliquely, and the blades being closed, a free incision would be readily made without danger.—*L'Experience, and Prov. Med. Journal.*

Recherches sur les Abcès Multiples, et sur les Accidents qu'amène la Présence du Pus dans la Systême Vasculaire. Thèse par Felix D'Arcet, M. D.—*Paris*, 1842.

Researches on Multiple Abscesses, and on the Morbid Effects of the Presence of Pus in the Vascular System. By F. D'Arcet, M. D. *Paris*, 1842.

[We quote the following notice of this book from our valuable cotemporary, the British and Foreign Medical Review, as we have not been furnished with a copy of the work. The subject of which it treats has been so frequently discussed in our pages, that we feel it unnecessary to make any further apology for introducing the following remarks.]

It is known to all engaged in the practice of surgery that purulent deposits in distant parts, sero-purulent effusions into the serous and synovial cavities, and typhoid symptoms of the worst character are of frequent occurrence after wounds and operations, and that the same events not rarely supervene upon some local diseases not connected in their origin with external injury. This subject has appeared to the Author of this thesis to admit of further elucidation by experiment; for, however fully these effects have been described, however attentively the circumstances under which they have taken place have been observed, however fully the symptoms accompanying them have been noted, there is as yet no agreement of opinion as to the mechanism of their production.

It seems to be allowed on all sides, that the consequences in question owe their origin to the presence of pus in the blood; but how the pus gets or is produced there is variously accounted for. It has been attributed, 1st, to the absorption of pus from the wound by the capillaries and veins open in it; 2nd, to phlebitis; 3rd, to metastasis; 4th, to the purulent diathesis or pyœma; 5th, to the evolution of pre-existing tubercles.

M. D'Arcet, without discussing the merits of these different theories, and without adopting any opinion as to the mode by which the

pus is mixed with the blood, assumes this ultimate result of all these views to be established, and then proceeds to describe the consequences of various experiments which he made upon animals by injections of this fluid in different states into their veins. Previous to doing so he remarks, that it has sometimes been asserted that multiplied abscesses, as he designates them, or purulent deposits, as we usually call them, have this peculiarity, that in the organ or part where they appear, none of the other ordinary evidences of inflammation are present, but that the pus seems as if deposited without any previous process of the kind. This he declares to be an error, for that he has always found a red spot of inflammation to precede their appearance, and when pus is actually present, coagulable lymph is deposited around it, which, becoming organized, assumes the appearance of a sort of cyst, having its internal surface as flocculent as that of the chorion itself.

If we take healthy pus, such as is the product of phlegmonous inflammation, and expose it to the action of oxygen gas, directly or through the intestines of a living animal, or a piece of gold-beater's leaf, it soon absorbs a volume and a half of the gas, producing only a fifth of carbonic acid. While this takes place the pus-globules run together and agglomerate, and form an amorphous layer or coat, which floats on the subjacent liquid. If exposure to the air or oxygen be continued, the whole become offensive and putrid, without, however, the layer above-mentioned becoming redissolved; and if we separate it by means of the filter we obtain a yellowish-green fluid, blackening silver, and evidently containing sulphuretted compounds, upon which a portion, yet not all the poisonous properties depend, seeing that these remain when the former have been removed by mixing litharge with the fluid.

Taking the *first product* of the spontaneous decomposition of pus, the amorphous, inert, and insoluble layer or substance, and having repeatedly washed it, M. D'Arcet injected into the jugular veins of rabbits and dogs. Where the animals were not immediately killed by the injection, which frequently happened, sometimes they got up, after a few moments of syncope, remained for a longer or shorter time in a state of prostration and weakness, and then recovered, without any traces of the experiment being left; at other times the depression increased, the animal retired into a corner, the pulse got frequent and hard, the respiration hurried, and death ensued, never later than forty-eight hours after the experiment, death taking place quietly, without diarrhœa, vomiting, &c. On examination there were found phlyctenæ of the lungs, subpleural ecchymoses, penetrating into the parenchyma, with a nodule of well-marked hepatization in their centre. In two instances only, one in a dog at the end of forty-eight hours (the time of death of the other was not noted), where the lungs were covered with ecchymoses, in several of them were found a circumscribed purulent deposit (noyau purulent circonscrit), identical with those met with in man. In both cases there was likewise effusion of serum into the cavity of the pleura

In none of these instances, however, were any other effects or

symptoms produced than those dependent on the local inflammation, i. e. of the lungs. There were none of the terrible symptoms which indicate a more profound affection of the system; there was disease, but no diathesis.

These effects, then, correspond to those produced by the injection of quicksilver by Cruveilhier and Gaspard, of charcoal in powder by Magendie, of cerebral substance by Dupuy, of the blood of the slug by Gaspard, of particles of gold by D'Arcet himself. And he, therefore, attributes them to a common cause, the insoluble, amorphous, and pulverulent nature of the substances injected rendering them incapable of elimination, and, from their size, of circulating in the capillaries. All these substances, when injected, produced no other results than local lobular inflammation of various organs, without other symptoms than those of pure phlegmonous inflammation.

The effects of the injection of the *second product* of the spontaneous decomposition of pus, of the yellowish-green putrid fluid, freed from all insoluble matters, were very different. Hiccup, vomiting, diarrhœa, rigors, fever, dyspnœa, opened the scene, followed by the most marked adynamic state, depression, stupor, involuntary evacuation of urine and fæces, pale appearance of the mucous membrane, different hæmorrhages, abdominal pains, and the most complete prostration, and death in five hours. On dissection the lungs were found of a violet-colour, infiltrated and indurated, as in œdema, their surface covered with small spots of subpleural and interlobular ecchymosis. Similar ecchymoses existed on the spleen, liver, and intestines; the inner membrane of the aorta was reddened; the blood fluid, black, greenish, containing grumous portions, which broke down under the fingers, without communicating the sensation of fibrin. These alterations, our author remarks, display a general malady, one of the whole system, one by which the life of all the organs is destroyed, instead of death from the interruption of a single function. It is no longer a disease, but a diathesis; the liquid injected acting like a leaven, has communicated its poisonous and deleterious properties to the entire blood.

If we inject *healthy pus* before it has undergone any decomposition from exposure to the air or oxygen, we by no means so frequently produce purulent deposits, as has been by some asserted. Out of eleven or twelve experiments, M. D'Arcet only twice succeeded in obtaining this result; in the majority of instances the putrid symptoms alone supervened.

Supposing that this failure might depend on human pus having been ejected, he put setons into the dog and rabbit, and injected the pus so obtained, but without any difference in the effects.

With the results of these experiments upon animals before him, M. D'Arcet then proceeds to draw a parallel line between them and those observed in man, and having established their entire correspondence, comes to the conclusion that the disease called *purulent absorption, phlebitis, purulent infection, purulent diathesis*, is a complex malady, where two very distinct classes of phenomena are observ-

able, but which occur so combined, that hitherto they have been confounded together. These phenomena are:

1. A disease of the respiratory, hepatic, or other organs; a local inflammation, dependent on a mechanical cause, the capillary tissue being embarrassed by insoluble and pulverulent principles developed in the pus by its exposure to the oxygen of the air (in the lungs), and not producing other constitutional effects than those of phlegmonous inflammations of the same organs.

2. A miasmatic poisoning, caused by the absorption and circulation of some principles of the pus itself become putrid, acting on the blood in a special manner, and producing grave general symptoms, especially characterized as adynamic, and such as indicate a class of diseases, where the entire organization is intimately deranged, as the plague, typhus fever, purpura, glanders, &c.

The explanation given of the origin and mechanism of these two effects is this:—Purulent matter, being mixed and circulating with the blood, reaches the lungs, and being there exposed to the action of oxygen, undergoes such changes as would happen to it, as an unorganized substance, out of the body. Its elements separate into two parts, the globules absorbing oxygen, increase the size by their reunion, and become incapable of traversing the capillaries, the calibre of which they obstruct, in the same way as mercury, gold, or charcoal, and thus produce those series of phenomena which result from those substances being introduced into the circulation. The liquid part, under the same influence, acquires putrid properties, which produce the effects above described, effects absolutely identical with those occurring from the simultaneous circulation of blood and putrid matter. Having given this explanation, our author adds, that he thinks it is impossible to admit that pus, in substance, can be absorbed by the capillaries; the laws of endosmosis applying, as they do, only to soluble substances, do not allow this. But, although the passage of pus itself does not take place, that of the purulent serosity, deprived of its globules, readily does so, and hence, in addition to inoculation strictly so called, there is another road opened for putridity entering the system.

The disappearance, by absorption, of collections of matter, or abscesses, without any remarkable disturbance of the system, is next alluded to. M. D'Arcet allows the fact, and endeavours to account for it. Having observed in several cases where purulent deposits had existed, as ascertained by dissection, that during life the urine was albuminous, he was led to infer that in cases where abscesses dispersed without bad consequences, this might also be the case; and he relates two instances (in man) in which he had an opportunity of observing and ascertaining that whilst the tumours were dispersing the urine became albuminous. But, although this accounts for the serous portion of pus with its albumen, which indeed forms by far the largest part of it, what becomes of the pus-globules? Referring to the observations of Dupuytren, we believe that these remain in the part and constitute the greasy, putty-like substance met with by that distinguished surgeon and others, in the seat of chronic abscesses which had spontaneously disappeared.

On Leeches, by Mr. James Banes.—Some months ago Mr. Fordred suggested that a few practical remarks on leeches might be acceptable to the readers of your Journal. Having been several years with the largest importer of leeches in England, I venture on the following observations, confining myself to such as may be useful to the retailer.

Leeches are usually sent out by the wholesale dealers packed in kegs or bags, in which manner they may be sent a journey of several days.

On receiving the leeches, turn them out into a jar, and pour upon them water to the depth of two or three inches, let them remain a few hours, then add more water, and stir the leeches briskly with the hand, or, what is better, a small whisk. When well cleaned put them into a jar about one-third filled with moderately soft water—the water must be changed as required, about twice a week in winter, and every other day in summer, will suffice if the leeches be healthy.

For the purpose of preserving them in a healthy state, when the water is changed, they should be well scrubbed with a whisk made of very fine broom or willow. This method will be found to answer much better than putting earth, moss, sand, &c. into the jars. When it is requisite to keep leeches a considerable length of time, they should be put into jars containing a mixture of well-tempered clay and water, rather thick, water being occasionally added to prevent the clay becoming too stiff; in this way they may be kept longer than any other method, except ponding.

Healthy leeches readily contract themselves when squeezed in the hand; if, on the contrary, they remain soft and flabby, they are considered unhealthy, and not to be depended upon; although it sometimes happens, especially in summer, that perfectly healthy leeches, after having travelled some distance, do not answer this mode of testing them, but remain rather flaccid, probably from exhaustion or sudden changes in the atmosphere during their journey; the treatment recommended at the commencement of this paper will generally be found to restore them in a few hours. Other modes of judging of their healthiness are known amongst the wholesale dealers; should they have a soft unctuous feel, they are considered weak, and require ponding some months to restore their vigour; if on being handled they remain elongated, or if small pustules appear on the body, or the mouth be discoloured and swollen, they are generally irrecoverable, and rapidly die off. Leeches are subject to several diseases, which it is not necessary to describe, as the only remedy likely to be of service, is placing in ponds, which is a plan the retailer cannot adopt. Porter, port wine, charcoal, and many other remedies have been suggested, but they are of very doubtful efficacy—frequently changing the water, and treating as before directed, will be found the plan most likely to succeed.

The best kind of jars for keeping leeches in are the brown-ware, rather rough in the inside, and of the size to hold about two gallons, about 250 leeches, may be put into a jar of this size, about one-third filled with water.

Leeches should be kept in a cool, dark place, especially if required

to be preserved a length of time; strong light appears to render them uneasy. It is better not to mix two parcels of leeches together, as they sometimes bite each other very much.—*Pharmaceutical Jour.*

Hyde, January 12th.

[We extract the following account of Preparations in the Museum of the Royal College of Surgeons, Ireland, from the valuable Catalogue by Dr. Houston.]

C. *b.* 359. Young llama, acute pleuritis of. The surface of the pleura is covered with a thick coating of lymph, which adheres to it loosely, and presents a spongy, honey-combed appearance, exactly like that shown in several of the specimens of human pathology.—*Dr. Houston.*

C. *b.* 360. Lynx, pneumonia of. The lung is hepatized, partly by effused lymph, and partly by red blood. The pleura is smeared over with lymph.—*Idem.*

C. *b.* 361. Mandril, lung of,—solidified to the consistence of liver, and of a yellowish-white colour, except where stained with extravasated blood.—*Idem.*

C. *b.* 362. Bear, lung of;—exhibiting an interesting and perfect specimen of the grey hepatization of Laennec.—*Idem.*

C. *b.* 363. Miliary tubercles in the lung of a mandril, accompanied with pulmonary congestion and pleuritis.—*Idem.*

C. *b.* 364. Tubercular infiltration in the lung of a monkey. Large patches of the white deposits are well shown off by an injection of the sound textures with size and vermilion.—*J. Shekleton, Esq.*

C. *b.* 365. Lungs, heart and liver of a spider-monkey. The lungs present, in some places, miliary tubercles; in others, sanguineous hepatization: and in others, again, their pleural investments are coated over with adherent lymph.—*Dr. Houston.*

C. *b.* 366. Lungs of a striated monkey, exhibiting both tubercles, and extensive tubercular infiltration, without softening of the new tissue in any part.—*Idem.*

C. *b.* 367. Lung of a monkey, with a large patch of tubercular infiltration, in the centre of which is a small abscess.—*Idem.*

C. *b.* 368. Lung of an ape, tuberculated, and so heavy as to sink in the fluid in which it is preserved. Notwithstanding the amount of scrofulous deposit, purulent matter has not in any part been generated.—*Idem.*

C. *b.* 369. Lungs of a monkey, the seat of tubercles and pleuritis. Similar tuberculous deposits existed in the liver, (see A. *d.* 785); the spleen (A. *d.* 807); the kidneys (F. *a.* 128), &c.—*Idem.*

C. *b.* 370. Section of the lung of an axis-deer, loaded with tubercles—some, consisting of firm tuberculous matter; others, in a state of central suppuration. Each tubercle appears, however, to have remained distinct and insulated, and not to have coalesced with its neighbours, so as to form larger common cavities, as is usually the case with the same disease when seated in the human lung; a result which may probably be owing to the more insulated condition of the clus-

ters of pulmonary vesicles in the lower mammalia than in man. A curious illustration tending to prove the accuracy of this view of the matter may be seen in the lung of a seal (see C. *b.* 377), affected with chronic hepatization, in which the clusters maintain perfectly their distinctive characters, in the midst of such serious disease.—*Dr. Houston.*

C. *b.* 371. Fibro-cartilaginous cysts, as large as walnuts and stuffed with dry tuberculous matter of an extremely offensive odour, taken from the sub-pleural cellular tissue of the axis-deer.—*Idem.*

C. *b.* 372. Section of the lung of a wild boar, crowded with tubercles, and tuberculous infiltration; and exhibiting, also, evidences of recent pleuro-pneumony. There was no tubercular cavities in any part of this lung, although the tubercular deposits had taken place to a large extent.—*Idem.*

C. *b.* 373. Small tubercular cavity in the lung of a bear. It is rough and irregular, and presents an appearance of blood-vessels running across its centre in various directions.—*Idem.*

C. *b.* 374. Large emphysematous sac attached to the lung of a bear. The walls of the cyst are formed on one side, by the pleural investment of the lung, and on the other, by the tissue of the organ itself, which is in a state of tubercular softening. Tubercles in different stages of development existed in great numbers, throughout both lungs.—*Professor Jacob.*

C. *b.* 375. Section of the lung of a dromedary. The pleural surface is covered with tubercular eminences, and the parenchyma is loaded, to hepatization, with pneumonic and tuberculous infiltrations. The animal had pined for a considerable time before its death under manifest symptoms of slow pulmonary disease.—*Dr. Houston.*

C. *b.* 376. Beautiful specimen of vesicular emphysema (dry preparation) from the lung of the same dromedary as that from which C. *b.* 275 was procured. There is, in particular, one large bag, lobulated on the surface, and infinitely subdivided, in the interior, by fine sepimenta.—*Idem.*

C. *b.* 377. Section of the lung of a seal, the seat of pneumonia. The part preserved is completely carnified; in the section, no apertures but those of a few scattered blood-vessels are to be seen; and lines marking the boundaries of the lobules are distinctly traceable. There were no pleuritic adhesions: but a large quantity of reddish serum, making a true hydro-thorax, existed. It is worthy of remark that the thin edge of the lung for its entire extent, was the part almost exclusively affected; the great thick part corresponding to the posterior mediastium and angles of the ribs, together with a large proportion of the base, were as light, crepitating, and healthy as the lung of the opposite side; in which particular, we may discover a comparative illustration of the view taken by the immortal Laennec, regarding the cause of the greater frequency of pneumonia in the lower than in the upper lobes of the lungs in the human subject, viz. the more depending position of these lobes; as, in the instance of the seal, the thin margin, that part in contact with the sternum, and consequently the lowest, had, perhaps from the same cause, become

the readiest to take on the congested condition leading to inflammation and its consequences. The seal, which was of enormous size, allowed itself to be noosed by two men, in a small boat, and dragged on shore where it died immediately—exhausted, no doubt, by the fever attendant on the acute pulmonary disease.—*Dr. Houston.*

C. *b.* 378. A few of the air cells of a soland goose, the seat of an acute attack of inflammation, which caused death. The walls of the cells are much thickened; their exposed surfaces are coated with lymph which has been blackened by exposure to the air; and in some places were observed to be actually blue-moulded from the same cause, though the examination was made before the animal had cooled in death.—*Idem.*

C. *b.* 379. Another portion of the same lung, close to the trachea, exhibiting the same kind of disorganization. In regard of their pathological changes, therefore, these air-vesicles resemble much serous membranes under the influence of exposure.—*Idem.*

C. *b.* 380. Numerous small transparent tubercles on the peritoneum and air cells of a pheasant. The texture of the lungs is otherwise healthy.—*Idem.*

C. *b.* 381. Lungs, heart and air cells of an Egyptian goose. The lungs are the seat of tubercles and tubercular infiltrations: the air vesicles are crowded with the same kind of diseased deposits. This affection would appear to be a frequent cause of death in animals of this class.

The foregoing series of the comparative pathology of the lungs is so far complete as to afford examples, in the lower animals, of most of the diseases to which the lung of the human being is liable.—*Dr. Houston.*

Hydrocele of the Tunica Vaginalis Testis, with an unusual Complication.—Case,—a man, thirty-six æt., on whom, about three years and a half before, an attempt at the radical cure, by injection with sulphate of zinc, had been made by Dr. Houston; the operation at the time was supposed to have been successful; the man went to the country, and for twelve months after, there was no accumulation of the fluid in the sac. Subsequently to this, however, he had occasion for several tappings. On readmission into the City of Dublin Hospital, where the injection had been in the first instance practised, it was considered expedient, from the thickened state of the sac, to have recourse to the operation of excision. Accordingly, the skin being divided perpendicularly, to the extent of an inch, the sac was lifted up by a tenaculum, through the opening thus made, and a portion of it, about half an inch in breadth, removed: a knife had to be used for the purpose, as in consequence of the gristly toughness of the sac, scissors failed to make any impression on it. There was no bleeding from either of these wounds, and on the instant of their completion, better than half a pint of clear fluid flowed from the sac: that the fluid which first escaped from the interior was almost colourless, is quite certain; but its discharge was instantaneously followed by a gush of dark venous blood, which continued flowing in an unin-

terrupted stream until, in a few moments, the quantity lost became alarming. It being evident that the hæmorrhage was derived from the interior of the sac, a narrow bandage was applied tightly round the scrotum, so as to press together the sides of the cavity, and a cold lotion applied. The bandage could only be tolerated for a few hours, but on its being loosened, the blood, although it soon filled up the sac to nearly its original size, did not flow out of the external wound. A chronic inflammation of the tumour set in, attended with a continued feverishness, pain in the back, loss of sleep, and emaciation. At the expiration of three weeks the symptoms growing worse, a puncture was made with an *explorator*, to determine the state of the contents, when the same kind of dark blood as before presented itself. The man having consented to the removal of the diseased organ, the operation was performed in a few days after. Not less than between thirty and forty small vessels in the scrotum required ligatures; and there was one artery, in particular, in the divided cord which poured out blood with great force. The man recovered perfectly, and soon acquired a state of health unknown to him for several years. The preparation shows the morbid condition of the parts, and explains the peculiarities of the case. The tumour is as large as an ordinary melon. The sac is three lines in thickness, and nearly as tough and unyielding as shoe-leather; scissors could with difficulty be made to cut it. *The inner surface of the cavity is lined by a highly organized, adventitious membrane, the blood-vessels in the substance of which are so large and numerous, as to form a complete trellis-work visible to the naked eye.* When first examined, the cavity of the tunica vaginalis was filled with dark grumous blood, and the new membrane was stained of the same colour: the adhesion of the membrane to the surface of the sac, although tolerably intimate, admits of being broken through by pressure with the handle of a knife. The testicle is sound. An artery as large as the radial may be seen in the spermatic cord, close above the tumour.—*Catalogue, Museum, Roy. Col. Surg. Ireland, by* Dr. Houston. F. *b.* 372.

Acute Ulceration of the Duodenum in Cases of Burn, by T. B. Curling, Esq.—Mr. Curling has drawn the attention of the profession to this affection as a complication of burn hitherto unnoticed, and which, therefore, to have its reality and due value properly estimated, should be looked after whenever opportunity offers. Mr. Curling gives ten such cases—four, which came under his own observation—two, which were furnished to him by friends, and four, previously recorded, which, considering the rarity of ulceration in this part of the tube and the absence of any previous symptoms of intestinal affection, appear to him sufficient to indicate the existence of a connexion between the injury in the skin and the disease in the duodenum. The subjects of the disease were young, the eldest having been twenty-eight years of age, whilst the ages of the other nine, varied from three years to nineteen. The ulcerative action was evidently of an acute character, a fatal termination having ensued in from seven to seventeen days after the injury in all the cases except one, in which the patient

survived till the end of five weeks. In three of the cases, death was occasioned by the ulceration going on to perforation; and in six, by hemorrhage consequent upon the lesion of a blood-vessel. The ulceration usually takes place in that part of the duodenum where it passes in front of the head of the pancreas, and the arteria pancreatico-duodenalis is the vessel from which the bleeding occurs. In some other fatal cases of burn Mr. Curling found the mucous membrane of this part of the duodenum congested, and of a fluid red colour, with enlarged and injected lympathic glands leading from it, the result of the irritation within, but short of actual ulceration. Brunner's glands, so numerous in the duodenum, Mr. C. thinks, may be the primary seat of the irritation. He says—"It is seldom that the secretions of any organ can be suddenly stopped without injurious consequences resulting, and considering the importance of those of the skin, and the continuity of this structure with the mucous surface of the alimentary canal, we can scarcely be surprised that the duodenal glands should sympathise and endeavour by an increased action to compensate for the suppression of the exhalation from the skin, and that the irritation consequent thereon should often lead to inflammation and ulceration."

The disease would appear to be indicated by pain and tenderness on pressure on the right side, midway between the cartilages of the ribs and umbilicus, by uneasy digestion, and sometimes also by vomiting, and, when ulceration ensues, by dark, bloody stools. The treatment Mr. C. should be disposed to adopt would be leeches to the skin on the corresponding part of the abdomen, if not implicated in the burn; the exhibition, at intervals, of a few grains of the hydrargyrum cum cretâ, combined with opium to allay pain; and allowing nothing but fluid nutriment of the blandest description. Mr. Curling adduces two cases in evidence that the ulcerative process may be arrested before producing perforation of the intestine or of a blood-vessel, and that the breach of surface admits of being repaired.—*Med. Chir. Trans.* vol. vii. 1842.

Aneurism of the ascending Aorta bursting into the right Ventricle; with a Communication between the two Ventricles, by Thomas S. Beck.—The patient, a medical gentleman, aged 31, tall, and of considerable muscular development, was unable, from his earliest recollection, to run or walk quickly any distance, without suffering violent palpitations of the heart, which also occurred during any particular excitement. He had always good health until about six years ago, when, being unfortunate in his profession, he endured great anxiety and privations. From this period, being much exposed to the weather and late hours, he was attacked with a cough, lost flesh, and suffered a great increase in the palpitations and dyspnœa. He had at one time acute pain in the region of the heart, and was occasionally attacked with a peculiar sensation in the heart, which he was unable to define in words. He became anasarcous; the stomach was very irritable; ascites, great dyspnœa, oppression and sinking, set in.

Physical Signs. — Dulness on percussion over the whole of the chest. Vesicular murmurs distinct. The sound of the heart's

action heard over the anterior and posterior parietes. The impulse increased. Both sounds of the heart were distinctly audible, and following the second sound, a continuous, very superficial, sawing sound with tremor, most distinct at the base of the heart, near to the sternum. This sound was very disagreeable to the ear, being so distinct and apparently close to it. It was continuous throughout the whole of the action of the heart, but loudest directly after the second sound.

Examination.—The heart much enlarged. The lining membrane of left ventricle and root of aorta, thickened and pearly. The semilunar valves, although slightly diseased, were sufficiently free to prevent regurgitation, except to a certain extent. The lining membrane of the right ventricle, and its semilunar valves, were much in the same state. From the right sinus of valsalva, at the root of the aorta, an opening so large as to admit the end of the little finger, led into the right ventricle, immediately beneath its semilunar valves, where lay the collapsed sac of an aneurism, resembling the end of a finger of a glove, about three quarters of an inch in length, and bursting at the extremity into three ragged openings; the edges of all of which were worn and rounded as if the blood had passed for some time through them. No coagulum was found in the sac, the mitral valves were healthy. Immediately at the base of the sac, there existed a communication, the size of a goose-quill, between the two ventricles. There was no communication between the auricles. The opening from the aorta into the right ventricle, was that of an aneurism which had burst into the latter cavity. The opening or passage through the septum ventriculorum was, no doubt, a congenital defect.—*Med. Chir. Trans.* vol. ii. 1842.

Petechial Cow-Pox.—Case, by George Gregory, M. D.—The occurrence of petechiæ as an attendant upon exanthemata, taken naturally, and even upon the small-pox, when excited artificially by inoculation, has been long known to physicians. But no instance, perhaps, other than that here given by Dr. Gregory, of the same condition being excited by the insertion of the vaccine virus, has ever been recorded. A fine, healthy female child, aged four years, was vaccinated at the Small-Pox Hospital, in five places on the left arm, on the 19th of May, 1842. An elder brother and a younger sister were vaccinated at the same time from the same source,—an unexceptionable eighth-day vesicle. On the 23rd, the arm was unusually inflamed, and some spots were noticed on the child's face; the child, in other respects, however, enjoyed its usual state of health. On the 26th, being the eighth day, the vesicles appeared dark, as if filled with blood; the ansla was of a mahogany colour, obviously from echymosis, and numerous petechiæ were dispersed over the whole body, more especially the face, neck, and arms. An ecchymosis formed on the left temple from a slight bruise. There was some bleeding from the left ear, and a few drops of blood had escaped from the nostril. The general health was good, the bowels acted freely from medicines; no blood was perceptible in the motions. The ecchy-

mosed state of the arm and the petechiæ declined with the decline of the cow-pock, and on the sixteenth day all hæmorrhagic appearance had ceased. Two scabs had fallen off, leaving good cicatrices. Three others, hard, and of a jet-black colour, still adhered. The child was in perfect health. The brother and sister of the child passed through the cow-pox in a perfectly normal manner.—*Med. Chir. Trans.* vol. vii. 1842.

Frequency of second Attacks of Small-Pox.—M. Serres states, that, from the observation of 1500 cases of small-pox, he has arrived at the conclusion, that secondary attacks of small-pox are as common after small-pox itself, as after vaccination; that in fact, vaccination has the simple effect of preventing a first attack of small-pox, being merely of the same efficacy in that respect, as an attack of small-pox itself.

Fatal Hæmorrhage from swallowing a Needle, by Joseph Bell, Esq.—Hugh Allen, aged 18,—Nov. 30, in eating some oatmeal porridge, felt that he swallowed some sharp substance, which continued sticking in his throat. In about a fortnight he commenced to spit some blood, about 6 o'clock, P.M., which he continued to do occasionally until about 11 o'clock, when he spat up about a soup-plateful. After this he got some sleep, but continued to spit up occasionally mouthfuls of blood. At 7 o'clock next morning, he vomited a large quantity, and expired in a few minutes.

On examination, a fine sewing-needle, three inches long, was found, opposite the crycoid cartilage, with its point sticking in the carotid artery, and its other extremity in the œsophagus. It had, after wounding the vessel, served as a conductor, along which the blood had passed into the œsophagus, and thence into the stomach, lungs, and mouth.—*Med. Gazette.*

Death from the Introduction of Needles into the Heart.—A soldier introduced two needles into his chest, in the region of the heart. On the second day, when admitted into hospital, he was screaming with agony, his pulse quick and hard, his body bathed in perspiration. He had distressing cough, and acute pain in the precordial region; crepitous rale at the anterior and lower part of left lung. The action of the heart tumultuous. No marks of the entrance of the needles in the skin. Treatment gave no relief; he died on the 19th day.

Post-mortem.—Under the skin two small openings were found between the fourth and fifth ribs, communicating with an abscess which extended into the substance of the lung. The interior of the pericardium was universally coated with a semi-coagulated, whitish, plastic lymph. Externally, the pericardium was also adherent to the left lung, and to the diaphragm. The heart was thickened and hardened in substance. The needles were found in the posterior and inferior part of the left lung, whither they had made their way pro-

bably in consequence of the movements of the heart and lungs.—(*Archives Generales de Medicine*, July, 1842.)

Ligature of the Primitive Iliac Artery.—The primitive iliac has been lately tied with entire success, at the Pennsylvania Hospital, by Dr. Edward Peace. We are enabled to present our readers with the following particulars of the case.

Israel Jones, a labourer, was admitted into the surgical wards of the Pennsylvania Hospital, on the 22nd of August, 1842, for an inguinal aneurism of five months' standing. Five months previous to his entrance he strained his right groin, while lifting a heavy stone. A few days subsequently, a hard tumour, about the size of a pea, made its appearance, which became as large as a walnut in the course of a month, and continued to increase until the end of the fourth month, when it attained its maximum growth. There was pulsation about the third or fourth week. About the beginning of the fourth month numbness and pain commenced in the tumour, and extended along the anterior portion of the thigh. The latter symptoms were always aggravated by exercise, and abated by rest. The man continued his daily occupations until three weeks previous to his entering the hospital, when his sufferings became so great as to oblige him to desist. The pain at this period was so acute as to deprive him of sleep, and obliged him to maintain night and day a sitting posture, with his leg flexed on the thigh, and this on the pelvis; the whole limb resting on its exterior aspect. The tumour was large and irregular, hemispheroidal, and was, at least, two inches in height, its vertical diameter five and a half inches, and the transverse diameter about the same. It appeared to involve nearly all the right external iliac, together with some two inches of the femoral artery of the right side.

The man was an excellent subject, in the prime of life, robust, temperate, and uniformly healthy.

The operation was performed on the morning of the 29th of August, by Dr. E. Peace, assisted by his colleagues, Drs. Randolph and Norris, and Dr. J. Rhea Barton, and occupied forty-seven minutes. It was performed in the following manner. A semi-elliptical incision was made, commencing over the anterior spinous process of the ileum, nearly on a level with the umbilicus, and directed obliquely downwards to within half an inch of the external abdominal ring, and nearly parallel to Poupart's ligament. The incision was seven inches in length. The integument, the fascia of the external oblique, the external oblique, and the fascia of the internal oblique, were divided with the bistoury. The transversalis and internal oblique muscles were now exposed, and with the aponeurosis were divided on a director. The peritoneum was then separated with some difficulty, and the vessel brought into view.

The vessel was taken up about half an inch above the bifurcation, the ligature being passed around it very readily by means of Gibson's needle. Pulsation and pain ceased in the tumour the moment it was tied.

Numbness of the limb and foot, and insensibility, particularly of

the toes, supervened immediately. Numbness continued to some degree, with occasional intervals, throughout the first two weeks. Sensibility gradually increased until the third day, when it was entirely restored, even in the toes. The limb below the knee became sensibly cold within an hour after the operation. It was immediately enveloped in carded wool, and recovered its natural temperature, as far down as the ankle, within the first twelve hours. At the end of twenty-four hours warmth had returned in the foot, the toes only remaining below the proper standard of heat. As the heat returned in the limb it augmented, so as to make it really warmer than the sound one, which continued to be the case during the first two weeks.

The capillary circulation in the toes continued sluggish until the sixth day, when it appeared to be entirely restored to activity. The man experienced slight pain, with the numbness, from time to time in the affected limb, but did not suffer materially until about the middle of the second week. At this time he complained of severe pain, beginning at the toes and darting up into the tumour. This pain was relieved by the application to the tumour of lint wet with laudanum. The tumour, which had previously been rather soft, at this time became much more dense, and decidedly smaller.

No other symptom worthy of especial note presented itself, except some tumefaction of the leg, which occurred on the fifteenth day and subsided in two days.

The wound was dressed on the fourth day, and every day thereafter. The discharge was always healthy and very moderate. The man's appetite excellent, and general health improved. One-half of the wound united by the first intention; and the whole wound, except the sinus occupied by the ligature, had cicatrised within the first two weeks.

The ligature came away on September 27th, the *thirty-fifth day.* The patient is now allowed to sit up, and is doing extremely well.

The man experienced great relief from the numbness and pain, in repeated friction of the whole limb (and especially the foot, which suffered the most in this way), with soap liniment.

This, we believe, is the ninth time the primitive iliac has been tied. It was first tied in 1812, by Professor Gibson, of the University of Pennsylvania, for a gun-shot wound. The patient died from peritoneal inflammation on the thirteenth day. 2. By Professor Mott, in 1827. The ligature came away on the eighteenth day, and the patient recovered. 3. By Sir Philip Crampton, in 1828. Death on the fourth day from hemorrhage. 4. By Mr. Liston, in 1829, for secondary hemorrhage after amputation; the patient, who was eight years old, died. 5. It was tied in 1833, by Mr. Guthrie, for supposed gluteal aneurism. The operation was successful. The patient died eight months subsequently, and the disease proved to be a medullary tumour. 6. In 1837, Mr. Salomon, of St. Petersburgh, tied the primitive iliac with success. 7. Mr. Syme, of Edinburgh, performed this operation in 1838. The patient died on the fourth day. 8. By M. Deguise, at the hospital of Charenton, Paris, in 1840. Successful.—*Philadelphia Medical Examiner.*

Foreign Body in the Œsophagus seventeen Years.—A highly intelligent young lady of this city, whose health has always been delicate, on rising in the morning about two years since, coughed slightly and hawked some hard substance into her mouth. On removing a small quantity of mucus, with which it had been ejected, it was discovered to be a small green glass ear-drop. Her mother recollected distinctly, that a pair of ear-rings, with green glass drops, had been presented by a relative, seventeen years previously, and that shortly afterwards, she had complained of having swallowed one of them; but as she felt no inconvenience, no notice was taken of it. The intelligence and veracity of the lady are such as place the facts as related beyond all doubt. The ear-drop, too, is evidently a very old-fashioned affair, such as is not now to be found in any jeweller's shop.—*Philadelphia Medical Examiner.*

Pathological Society.—At a Meeting of the Pathological Society of Dublin, the following distinguished individuals were elected Honorary Members of that Society:

Professor Schoenlein.
„ Carus.
„ Tiedemann.
„ Louis.
„ Andral.
„ Cruveilhier.
Sir Benjamin Brodie.
Professor Alison.
Sir James Clarke.
Dr. Abercrombie.
Professor Todd.
Dr. Hodgkin.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. VII.—*Some Cases of painful Affections of the fifth Pair of Nerves, with Observations.* By JOHN HAMILTON, M.R.I.A.

CASE I.—*Painful subcutaneous Tubercle in the Temple, over the temporo-auricular Branch of the superior maxillary Nerve.* CHARLES DALE, ætat. 25, a shoemaker, now salesman at Messrs. Scott and Shields', Castle-street, pale and delicate looking, but not thin, complains of the most distressing attacks of pain shooting from the temple all round the right side of the head up to the vertex, behind to the occiput, and before to the centre of the forehead; from the same spot proceed darts of pain like fire, to the right eye, with an appearance of red spots before the eye, and dimness of vision, and at the same time he gets deaf of the right ear, the eye becomes swollen, and there is such discoloration about it that he has often been asked if he had a black eye; the pain also engages the side of the face, but never the jaw or teeth. There is a general soreness of the whole scalp at that side; but he refers the origin of all his sufferings to the presence of a small tumour at that part of the temple from which the painful sensations

spring; and on examination I discovered in front of, and just above the helix of the ear, at the roots of the zygoma, where the temporal artery commences, a small tubercle about the size of a grain of shot; it was moveable, and evidently rather deeply situated, and after a little handling disappeared, as if it sunk into the substance of the parts beneath: after he had performed the action of mastication, it became again apparent. He was always sensible of a painful feeling in it, increased by pressure or by the action of the temporal muscles in eating. The shocks of pain commenced like the blow of a heavy stick at this particular spot, and at such times the tubercle used to become larger. He has suffered from the complaint for eleven or twelve years; it began with paroxysms of pain about once a month, sometimes oftener, sometimes with intervals of three months, increasing in violence, at length he got an epileptic fit, commencing with a gushing sensation (aura epileptica) from the site of the tubercle (of whose existence he was not then aware), with insensibility and convulsions; he had eighteen of these fits, the last well marked one about seven years ago. Turpentine, which he then took, subdued them, and has since kept them in check, but not entirely, as he had shocks afterwards as nearly like the fits as possible. But during the whole of this long period, he has never ceased to suffer from occasional attacks of pain, which latterly have increased both in severity and frequency; so much so, that a day now scarcely passes without a shock, and in the interval he is never free from a dull, heavy, stupifying pain in the right side of the head; he has also, very lately, had some attacks bordering on epilepsy, short intervals of insensibility, preceded by an aura from the tubercle. His general health is wretched; he is gloomy and desponding, and unable to work at his business; the least thing frightens him and makes him start; he suffers from palpitation of the heart, and nervous pains about the thorax, and rather severe neuralgia of the liver; he has taken much medicine without benefit, and after cupping from the back of the neck he was decidedly worse.

I advised the excision of the tubercle, as the only chance of relief. To this he readily assented. An incision was made over the tumour, and a small dark coloured tubercle became apparent, which was readily removed; but after its removal pressure, on the sides of the place where it had been, gave rise to disagreeable sensations, similar to what he had felt when the tumour had been pressed. I therefore removed two little substances in these situations, which, afterwards examined with a magnifier, had the appearance of portions of nerve. The tubercle itself was round, of a brown colour, composed of a perfect cyst, containing a small, hard, calcareous substance of a chocolate colour; the surface of the tubercle was quite clean, nothing like nervous substance attached to it.

Mr. Philip Crampton, of Stevens' Hospital, was kind enough to examine the composition of the brown calcareous matter for me, and found it to consist chiefly of carbonate of iron, with a little carbonate of lime.

For some days after the operation he was free from any of the former sensation, and his health improved in the most remarkable manner; but about a fornight after, the wound having been quite cicatrized, he came to me, and, much to my disappointment, said his old symptoms were returning; that for some days he had had pain in the right side of the head, and yesterday the head symptoms were so severe that he had taken turpentine, having dreaded a fit. On examination, I found a small moveable tumour in the situation of the other; I was puzzled whether this was a second tubercle or not. Cutting down on it, I could discover nothing definite; there only appeared a little whitish condensed cellular tissue, which was painful on pressure: this I took as my guide, removing every part of the substance that produced the peculiar sensation on pressure. When I had done so, to some depth, I clearly distinguished a branch of a nerve crossing the bottom of the wound; touching this with the blunt end of a probe, induced a peculiar uneasy feel, which made him exclaim that he was sure I was touching a nerve. I

now understood the second accession of painful symptoms to have been caused by the pressure of the cicatrix (formed after the first operation) on this nerve; the cicatrix occupying the situation of the tubercle, and producing the same mechanical effects. As there appeared to be some morbid sensibility of the sides of the incision, I touched them lightly with caustic kali, and dressed the wound from the bottom. Mr. Fleming was present at both operations. Three weeks after the wound had quite healed by granulation, and he had no pain or complaint of any kind, and his general health is now excellent, such as he never remembers it to have been before. It is eight months since the removal of the tubercle, and he is perfectly well.

This case is worthy of note in several respects :

1st. The long duration of the symptoms, without their cause having been discovered, offering a sad instance of the lengthened misery entailed on a patient by oversight in such cases.

2nd. From the position of the tubercle, the nerve affected by its presence was most probably the temporo-auricular, or temporalis superficialis of the superior maxillary branch of the fifth. This supposition is confirmed by the fact of the parts affected by pain having been chiefly those supplied by this nerve, or those freely anastomosing with it, as the occipital and portio-dura of the seventh. The reflex actions, induced by the irritation of the nerve, were remarkably violent, producing the epileptic fits; but what is very singular, these reflex actions were in a great measure controlled by turpentine, although the irritating mechanical cause still existed.

3rd. The composition of the tubercle itself, chiefly carbonate of iron; the structure of the subcutaneous tubercle having been generally described as "homogeneous, of a dirty white colour, without a trace of cavities or divisions, of a fibrous, fibro-cartilaginous, or cartilaginous consistence."* The young man denied the possibility of the introduction of any foreign body. I have

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* Dupuytreyn—Leçons Orales.

only found one case which presents any analogy to it. Mr. Windsor, in the Edinburgh Medical and Surgical Journal for 1811, states, that he removed a tubercle from the forearm of a woman, and found it to consist of a cyst, containing numerous little grains, which gave the sensation of sandy or earthy bodies.

4th. Its situation. Subcutaneous tubercles are not very rare in the extremities or trunk, and are occasionally met with on the face. Of this last, I remember to have seen an instance on the inside of the right of the upper lip, from whence acute darts of pain shot to the right eyebrow, ear, and side of the nose. These ceased on the removal of the little tubercle after five years' suffering, numerous incisions having been made through it previously, and much constitutional treatment employed, without effect. But no author, as far as I have been able to find, has given a case of subcutaneous tubercle in the head. I am, therefore, happy to be able to add to that of Dale's, another case, which I attended with Sir P. Crampton, whom I assisted in the operation.

Case II.—May 12, 1837. A lady, ætat. 25, for eight years had observed, at the left side of the head, about two inches above and a little behind the left ear, a small painful tumour, not larger than a shot and nearly as hard; it was quite moveable; from it pain darted, in various directions, to the ear, along the head to the eye, and down the side of the neck. She was very subject to nervous headach, and to very severe ear and face-ach, at which times the darts of pain from this little tumour were most acute. It was very painful on pressure, occasioning a sick feel, and was more painful for some time after. Sir P. Crampton cut through the tumour, and on looking at each side of the incision, a small white speck like a millet seed, was seen imbedded in the skin itself, and not moveable as it felt before the incision was made. A piece of lint was put in the cut.

For three or four days after she suffered a great deal of pain in and about the affected spot; she had severe nervous headach,

with intolerance of light and of sound, with langour and depression of spirits. On the second day the lint was taken out, and on the fourth day the wound was united. For four years after she never had any return of pain, nor did she ever suffer during that time from ear-ach, or nervous headach.

The next case, though of a different kind, is nearly allied to the foregoing, presenting an example of the extensive sympathetic derangement of the whole nerve, from the local irritation of one of its branches.

Case III.—Catherine Dunfield, ætat. 25, had been under my care for strumous sore throat, and for a slight attack of superficial lupus on the forehead, marked by numerous small, very painful ulcers, eating quickly and deeply into the skin. I had also attended her frequently for sciatica, of an unusually painful character.

May 1, 1840.—She went to bed well, but awoke in the night with a most severe pain in the back of the head, and darting through the ears. It was most acute, and lasted till morning. I saw her a week after. During the intervening time she had had each night a paroxysm of the pain, which went off towards morning. She had a second paroxysm at three o'clock, p. m., and suffered from it at intervals during the day. The attacks were increasing in severity. She was nervous and low. Pulse, 76; tongue, slightly furred; no sickness of stomach; bowels, confined.

Purging, quinine, mercury to slight salivation, colchium, a small cupping at the back of the neck, and a blister to the occiput failed to relieve her; but on the contrary, she became much worse, particularly after the cupping, though only four ounces of blood had been removed. She had hitherto been up, but on the 11th I found her in bed, and she said that the night before she thought she would have gone distracted with the pain. The pain had also changed its situation, having extended to the vertex, right temple, cheek-bones and side of face, and the upper part

of the side of the neck ; in short, it engaged the temporo-facial, facial, and cervico-facial branches of the portio dura of the seventh pair of nerves.

All these parts were tender to the touch. I had asked her before whether there was any sore on any part of the head, and had been contented with her assurance that there was not. I now, however, made a careful examination, and found at the right side, about the upper and posterior part of the parietal bone, a small scabby crust ; when this was removed, there appeared a small lupoid ulcer, the size of a fourpenny, deep, undermined beneath the edges, the circumference tumid and tender. The true nature of the case now struck me; the present ulcer had gone deep enough to affect the pericranium, and at first one of the posterior superior branches of the seventh nerve, and the branches of the occipital, by the free communication which exists between them; that in a less irritable temperament, the effects of the ulcer might have been purely local, and confined to that part of the nerve engaged in the ulcer ; but in her nervous excitable constitution, the morbid irritation had extended to all the ramifications of the nerve. As it was obvious that the only treatment likely to afford relief, was that directed to the ulcer, I made a transverse incision through it down to the bone. That night she first got ease, freedom from pain, and sleep. She had no return of the pain, and soon got quite well.

The next case of neuralgia of the vidian, temporal, and dental branches of the superior maxillary, presents some features of interest.

Case IV.—December, 1840. Ellen Whelan, ætat. 40, residing at 11, Stafford-street, married, and has had eight children; usually healthy, but now appears pale and worn ; suffers dreadfully from pain in the left side of the face, beginning at the upper jaw, above the molars, and going up the side of the head and out through the ear, so acute as to make the tears run down the cheeks, and so sore to the touch that she could not bear a finger near it. Felt only now and then, and not acutely during

the day; it usually becomes severe at eleven o'clock at night, and keeps her awake until daybreak, walking about the room in great torture. She is a little deaf in the left ear, which she has been occasionally for some years; but she has only suffered from the pain in the face for the last four months. She had taken a great variety of medicines, applied three blisters, and had several teeth drawn without the least benefit.

Examining the left ear, I found it blocked up with wax, of extreme hardness. This I removed, not without some pain, and afterwards syringed the ear well. Immediately after this she fainted, and remained in a state more nearly resembling death than I had ever seen before, for half an hour.

After recovering from this, not only the deafness, but *all pain in the side of the head and ear, had disappeared.* The only thing to deal with was the painful affection of the dental branch of the superior maxillary. The night of the day on which I removed the hard wax she slept well, which she had not done for three weeks; the next night the pain in the jaw returned. As there appeared to be some gastric derangement, I put her on alternate doses of blue pills and purgatives; for a few days after which I gave her half a drachm of bark, and a scruple of carbonate of iron, three times a day, and at the end of a week she was quite well.

I have only met with one instance of acute inflammation of the fifth, and I have seen few cases where the suffering was more acute, or where energetic and prompt treatment was more loudly demanded; and had such not been used, I felt persuaded that the inflammation would have extended along the nerve to the brain, and the termination have been fatal.

Case V.—Saturday, April 22, 1837. Mr. ——— took ill in Court, with rigor, pains and soreness in the bones, great prostration of strength, and pallor, with an unpleasant feel in the head, not exactly pain, and an occasional slight dart of pain in the right ear. About the middle of the day these symptoms were succeeded by fever, hot skin, flushed face, thirst; pulse, 132,

full, but soft, and easily compressible; tongue white at edges, dry and brownish down the centre. A slight increase in the pain in the ear, but nothing very decided. He passed a restless night, and the pain in the ear became more marked.

Sunday. He is now labouring under most intense pain in the ear, side of the face going up the temple, down the side of the jaw, and even to the teeth, with occasional darts, like electric shocks, so severe as to make the whole of that side of the body start, causing him to jump in the bed. The accompanying fever was high; pulse 120; tongue quite white; skin hot, but moist; thirst, and prostration of strength. The pain was a little mitigated by the application of leeches. Their application was repeated to the number of twenty; and he was put on pills of calomel and Dover's powder.

Monday. Was free from pain in the morning, and passed a tolerable night; it began to come on, however, at two o'clock, and increased greatly till three o'clock. It was again relieved by free leeching. The quantity of Dover's powder was increased in the calomel pills. After the leeching he fell asleep; at night he was free from pain; his pulse 80; tongue still quite white.

Tuesday. Passed a good night, and in the morning was free from pain; but towards the middle of the day it again appeared with severity and with starts; pulse 96; skin hot.

Wednesday. Mouth sore; pain only seldom, and then dull and faint. On the three following days no pain, and he appeared quite well, pulse 72, and slept without the powders; but on Saturday night he raved and talked to himself, and on being questioned, said there was somebody in the room annoying him; it was some little time before he spoke rationally.

Sunday. Pulse 88; occasional darts of pain; does not feel so well. In the evening the pulse rose to 96.

Monday. Occasional darts of pain, which became more severe towards the middle of the day; pulse 108;. Leeches and a blister were applied with complete relief.

Pulv. Dover, gr. x. h. s.

Tuesday. Slept well, free from pain; pulse 88; tongue looks better than it has yet done, the white having disappeared, and been replaced by yellow fur.

Wednesday. Well; pulse 80; tongue nearly quite clean. From that time he never has had the least pain in the face.

The effect of the free leeching and mercury in checking the progress of this acute case was very satisfactory. In the treatment of more chronic affections of the fifth nerve it has lately been recommended, much too exclusively I think, to combat the disease by what has been called rational constitutional treatment, directed to improve the gastric and hepatic derangements; which derangements it has been attempted to prove are the causes of the majority of what are called idiopathic cases of tic doloreux. Were they really so, this treatment would fail much less frequently than it does. But those who see many examples of painful affections of the fifth or other nerves will allow that in the greater number of instances they cannot be traced to gastric derangement, and that in those cases where the stomach and liver offer much functional disturbance the removal of this does not always, or even generally, cure the neuralgia. In many cases, on the other hand, the gastric derangement, and the general disturbance of most of the organs in the system, follow the pain in the nerve, and in such cases the tongue frequently cleans under the use of opium. Often, however, treatment directed to improve the secretion of the liver and bowels, is the best preparation for tonics or narcotics, and lays the best foundation for a complete cure. Where I conceive this plan most suitable I generally give three or four grains of rhubarb and as many of blue pill at bed-time, with the sulphate of magnesia, sulphuric acid, and infusion of roses, the next morning, for three or four nights and mornings; after this the patient feels better generally, but the pain is usually but little affected. I now give a drachm of bark and a scruple of carbonate of iron, three times a day; and where the pain becomes more severe at night, two grains of the extract of hyosciamus and one of opium, at bed-

time, to be repeated in the middle of the night if necessary. This treatment very often succeeds, much more so than beginning with bark, quinine, or carbonate of iron, at once, without any regard to the state of the digestive organs. Local depletion, particularly in the florid, and blistering, are very useful; but in most chronic cases the abstraction of blood aggravates the pain. There are cases, however, in which it is only wasting time, and prolonging the patient's sufferings, not to begin at once with tonics and narcotics, which often effect a rapid and almost unexpected cure. In illustration of this I may give the two following cases.

Case VI.—Mrs. ———, the lady who had the subcutaneous tubercle removed from the side of the head, and who never since had suffered from any nervous pain, sent for me suddenly, February 14, 1842. She had recovered from influenza, and two days before I saw her became affected with the most dreadful pain in the right side of the head, eyebrow, face, and in the site of the infra-orbital nerve, and along the teeth. It had come on each day at eleven o'clock, and made her wild with pain, forcing her to stamp about the room. It was four o'clock when I saw her, and the attack was then subsiding, but she appeared languid and ill: pulse quick; tongue slightly furred; bowels had been freely opened by the senna mixture, but with no relief, as this day the paroxysm had been more violent than before. A good deal of discharge from the nose. Knowing her habit to be very nervous, I ordered the following mixture, of which an ounce was to be taken whenever the pain come on:

℞. Mist. Camphor. ℥ iiiss.
Syrup. Croci, ℥ ii.
Liquor. Hoffmann. ℥ i.
Gutt. Nigræ, gt. xii. Fiat mist.

The pain began in the evening, but, as she said herself, it was stopped, as if by a charm, by the mixture, and she passed a good night. Next day, after a violent fit of coughing, the pain came on, but was lulled by an ounce of the mixture. Twice

during the day it tried, as it were, to return, but was checked each time by the same means. The next day the same thing occurred, and the fourth day she was quite well.

Case VII.—Mrs. P. came to me last November, complaining of agonizing pain in the right side of the face, in the situation of the supra and infra-orbital nerves, above the eye-tooth, along the lower jaw, and up the side of the head, which was, during a paroxysm, sore to the touch. The paroxysms were irregular, brought on when she got hot, or took a hot drink, and worse at night, which she spent walking about the room, or sitting up in bed. The heat of the fire induced the pain, but she felt relief from cold dry cloths applied to the face, or from cold air. She had the peculiar heavy dull look of those suffering from aggravated neuralgia. She was not thin. Five or six years ago she had metritis after her confinement, for which she was obliged to be very actively treated, by depletion and salivation; she never thoroughly recovered, but became affected with lightness of the head, stupor, &c., and finally, by the painful affection of the face, for this, among other treatment, she had had three teeth drawn, but without any relief. She had then applied to me, and she now came begging I would give her the same pill which had cured her at that time.

This pill was two grains of extract of hyosciamus and half a grain of opium. I ordered her three of the same; and six days after she came to say, that after the second pill the pain had gone, and had not since returned. Finding her labouring under weight and stupor in the head, and that her tongue was loaded, I put her on alterative doses of blue pill and rhubarb at night, with the sulphate of magnesia in the morning; and ordered her shower baths and an issue on the vertex. I have not seen her since.

The truth is, that no cases require such varied treatment as painful affections of the nerves of the face, and he is certainly the best practitioner who lays down no set rule, nor binds himself to any one particular treatment, but changes it according to

the case and the habits of his patient. Relapses are always to be looked for, and what cured in a former attack, may fail in this. Hyosciamus certainly still deserves all the praise bestowed on it by Fothergill; in numerous instances I have found it by far the best narcotic; it often answers extremely well exhibited at the same time with bark and carbonate of iron.

Ellen Whelan, the subject of the fourth observation, after having been entirely free from pain for two years, came to me in last December, suffering from her old complaint, violent pain in the left side of the face, with a sensation as if she had not the right feeling in the cheeks, headach, and a heavy, stupid feel, &c. The pain became very bad each evening at five o'clock, when she was obliged to go to bed, but the pain would force her soon to get up, and she passed the greater part of the night alternately walking about, and lying down, till, completely exhausted, she would fall asleep towards morning. She had been ill for near a fortnight. Bowels costive; tongue covered with yellow fur; pulse 88, rather full. I put her on the alterative doses of blue pill and rhubarb at night, and the sulphate of magnesia every morning for a few days, with some relief to the head, but none to the pain. Two grains of quinine and half a grain of opium (a combination which often succeeds in periodic neuralgia) were ordered to be taken each evening before the supervention of the paroxysm, and to be repeated every third hour till relief followed. At first she got relief, but at last the pills lost their effect, and the pain returned as bad as before. I now determined to try the extract of hyosciamus in the form of what, on the continent, are called Meglin's Pills, viz.

Oxyd. Zinci.
Ext. Hyosciam.
—— Valerian, āā ℈i. in pil. xx.
Two to be taken night and morning.

I gave at the same time half a drachm of bark and a scruple of carbonate of iron three times a day. The pills sickened her at

first, but after the first two the pain was decidedly easier, and on the fourth day she was quite well. It matters little which of the remedies used in this case has the merit of the cure, it is perhaps sufficient to know that in similar cases such a combination may succeed.

ART. VIII.—*Cases and Observations on the Dropsy following Scarlet Fever in Children.* By CATHCART LEES, M. B., Physician to the South Dublin Union, and to the Institution for Diseases of Children.

As there exists much difference among the profession in the present day, in regard to the essential nature of the anasarca which so frequently succeeds to scarlet fever, I think it may prove interesting to place on record some cases which have occurred in my practice in the South Union Workhouse.

Scarlatina was very prevalent among the children of the Institution in October, 1840, but assumed a remarkably mild character, the eruption being healthy, with very slight affection of the throat. Several children were brought to me in November with œdema of the face, and general anasarca, so as to assume almost the character of an epidemic; but out of thirty-six such cases, only two had been under treatment for scarlatina; but I presume that the other children must have also had the disease, though in so slight a form as not to have been reported sick, and therefore that the first stage of the disease had been allowed to run its course, uninterfered with.

As the number of cases which occurred have afforded me an opportunity of studying the disease satisfactorily, particularly with regard to its complication and the pathological state of the viscera, I have selected a few of the more important cases, which will serve to illustrate the principal features of the disease.

In consulting the various authors who have written on this

subject, it is curious to observe at what different conclusions they have arrived, with regard to its importance;* thus Cullen, Bateman, and Armstrong pass it over with but slight notice. Dr. Darwell, in the Cyclopædia of Practical Medicine, states that he has never met with a fatal case, and that he is indebted to Drs. Wells and Abercrombie for a description of the morbid appearances. The last named authors treat of it as a serious and often fatal disease; Plenciz describes it as having been more fatal than the scarlatina itself, which prevailed in Vienna in 1762; and Burserius, in his Institutes,† states, that in 1517, at Florence, it proved very fatal, till they discovered that it depended on inflammation of the lungs and pleura. "They were therefore led to adopt the opinion, that pneumonia ought to be considered as the primary disease, and that the swelling was a symptom or effect of it." Although in the present advanced state of science, no pathologist would adopt this opinion, yet I think that sufficient attention has not been paid to the different causes of the disease, nor to its complication, I shall therefore arrange the cases which have occurred in my practice under three heads.

Case I.—James Condran, æt. 10, a fine healthy boy, was brought to me on November 12th, by his mother, who said she had perceived his face slightly swelled for a few days, with loss of appetite. He appeared drowsy and heavy; bowels costive; pulse 80, full; urine scanty, and turbid, like porter; it filters quite clear, and is highly albuminous. The extremities were slightly œdematous, as well as the skin.

V. S. ad ʒ vi. Calomel. gr. ii. Pulv. Jalap. Comp. gr. xii.

13th. A wretched night, from cough and dyspnœa; blood not buffed nor cupped; pulse 90, full.

V. S. ad ʒ iv. Misturæ expectorant.

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* The reason of this discrepancy is easily accounted for, as stated by Dr. Copeland, viz. that its severity varies with the state of the prevailing epidemic.

† Vol. ii. 123.

14th. Breathing much oppressed; he is obliged to sit up in bed, and appears several times to be on the point of suffocation; sonorous rales all over his chest; œdema of the face and extremities increased.

Aqua Ammon. Acetatis Infus. Digitalis āā ʒi. Tinctura Digitalis gt. xxx. Aqua Carui ʒiv. Acetat. Potassæ ʒss. ʒi. ter in die.

He improved under this treatment; the urine became quite clear, the anasarca lessened, the albumen gradually disappeared. He recovered perfectly.

Case II.—John Brangan, æt. 4, admitted on December 8th, with œdema of the face and extremities, which was perceived on yesterday; tongue furred; skin hot. He has diarrhœa. The urine was scanty, of a dark colour, like porter, and highly albuminous. I first regulated his bowels by mild doses of Hydrarg. cum Creta, with Pulv. Doveri, and warm baths; then gave Aqua Ammonia Acetate with Digitalis; under which treatment he rapidly recovered. During the whole period of the disease he suffered greatly from frequent and sudden attacks of orthopnœa, *particularly severe at night*, so as to threaten suffocation; and which, I presume, depended on a transfer of the serous fluid to the cellular tissue of the lungs, constituting an idiopathic anasarca of these organs.

Those cases are sufficient to illustrate the simplest form of the disease, and may furnish some ground for discussion as to the connexion of an albuminous state of the urine with disease of the kidney; thus in both cases there existed hæmaturia, for I have no doubt of this state of the urine being nearly allied to a true hæmorrhage; and this very circumstance raises a difficulty in the diagnosis, for although we are aware that in the first stage of Bright's disease there is frequently hæmaturia, yet the question arises, whether in the cases related above, the presence of albumen was owing to the serum of the blood, independent of any organic disease of the kidney; that this was the case, I am inclined to think, for the following reasons:

1st. We find the albumen to disappear in a very short space of time, under mild general treatment.

2nd. We know that an albuminous state of the urine often occurs in acute diseases of children, totally unconnected with disease of the kidney.

3rd. During convalescence after the exanthemata, the urine in children generally presents the character of anæmia; so that it may almost be considered as a normal state, exhibiting much the appearance of that in Bright's disease; its specific gravity being reduced, the amount of urea and uric acid being also diminished, and frequently albumen being present.

4th. It has been ascertained by the researches of Becquerel, that in dropsies, depending on alteration in the blood, and causing œdema of the kidneys, albumen is often found in the urine, independent of Bright's disease.

The first case is particularly interesting, as showing the effect of general bleeding, by which he does not appear to have been benefited; perhaps the presence of blood in the urine* might serve as a guide to our practice in this respect, and teach us to regard it as an effort of Nature to relieve herself, particularly when we consider that hæmorrhages so often occur in this disease from the nostrils, stomach, and intestines. Partly influenced by this consideration, I did not bleed from the arm in any of the other cases, but merely applied leeches to the feet or abdomen, if any inflammatory symptoms demanded them; but mild, alterative treatment, with diuretics and purgatives, and baths, always succeeded in curing them. In this plan of treatment I am confirmed by the opinion of Dr. Croker, who has had ample opportunities of witnessing the disease at the Insti-

* This opinion was also held by Dr. Wells, who states, that he almost always found serum in the urine of those affected with this dropsy. He continues thus: "After I had discovered this fact, I was no longer surprised at what had formerly seemed to me very strange, that a person who was recovering from this disease, should eat heartily, sleep well, and apparently have no extraordinary evacuation, and should yet remain long very feeble."

tution for Children in Pitt-street, and he informs me, that he seldom has to bleed from the arm ;* indeed I believe that the disposition to the effusion of fluid ceases after a certain time, and that the natural tendency of the disease is towards a cure, if not interrupted either by injudicious interference, or by some complication arising during its progress, of which the subjoined cases will prove the danger.

Case III.—George Carr, æt. 2, a delicate child, was brought to me on December 6th, suffering from diarrhœa of ten days' duration. He was very feverish ; skin hot ; passes frequent white mucous stools ; face and body slightly œdematous ; pulse 120. I leeched the abdomen ; gave him Hydrarg. cum Creta and Pulv. Doveri. He became worse ; the diarrhœa persisted ; the anasarca increased ; a short, dry cough set in ; and he died on the 12th, having had convulsions during the night. The brain was natural ; there were four ounces of greenish serum in the left pleura ; the inferior lobe of the left lung was hepatized, with recent lymph on its surface ; the mucous membrane of the large intestine was thickened, and presented a peculiar rough, warty appearance, highly vascular. The kidneys were carefully examined by Dr. Carlile, Professor of Anatomy at Park-street School of Medicine, and by Dr. Hill, who both considered them as being in a perfectly normal state.

Case IV.—John Hines, æt. 10, a fine boy, had passed through a mild attack of scarlatina, and appeared to be convalescent, when on the twenty-second day from the commencement, he complained of pain in the belly. He looked heavy, and his face appeared to be slightly swelled ; pulse 78. He got some mild medicine, but that night he was suddenly attacked with convulsions of the right arm and leg ; the left pupil became largely dilated. He was bled, and put on calomel,

* My colleague, Surgeon Shannon, who (previous to his appointment to the Hospital of the South Union) had charge of an extensive dispensary in this district, and has thus had great experience among the children of the poor, holds the same opinion.

with antimonials. Next day he lay insensible; pulse 120; frequent convulsions; and died on the fourth day.

There was great congestion of the brain and its membranes; substance of the brain firm and vascular; some serum in the ventricles. The inferior and middle lobe of the right lung were passing from the first to the second stage of pneumonia. The inferior lobe of the left lung was hepatized; the superior lobe had passed into the third stage. The kidneys were examined with great care, but presented a natural appearance. I was not able to procure any of the urine either in this case or in the preceding. I regret this particularly, as Dr. Willis of London (in a paper recently written on the subject), appears to consider granular degeneration of the kidneys as the most common lesion present.

These cases, I think, are highly important, as evincing the insidious and fatal nature of the disease, in what I may call its secondary, or complicated form. Thus in the last case, the disease of the lungs never revealed itself by any of the usual symptoms. The child had never left the ward; the nurse (a person on whom I could rely) said that it had a short cough, but nothing to signify, and the pulse was only 78 on the morning of the attack of convulsions.

Such cases as these should tend to impress on us the necessity of making an accurate diagnosis, both as to the nature of the affection, and the particular organs which are interested; for although the general symptoms, and the state of the urine, may indicate to us that the disease is of an inflammatory character, yet for the successful treatment, particularly in children, it is of great importance to apply our remedies to the essential seat of disease.*

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* As an additional proof of the very fatal tendency of this form of the disease, I find that in the *compte rendu* of the Clinique of Diseases of Children at Strasbourg, by Dr. Stober, it is stated, that six out of eight cases died. One of these was very remarkable for the rapidity of its course: it was that of a child, who had slight anasarca, and scarcely any fever; but having left its bed, and

Although this form of dropsy after scarlatina chiefly affects the subcutaneous cellular texture, yet it may pervade that tissue throughout the entire body, and thus assume a truly formidable character, constituting what I think I may designate as the tertiary form of the disease. The most frequent source of danger in this form, I believe to arise from the effusion of fluid into the chest, chiefly into the cellular substance of the lungs, or into that in the cavity of the thorax; and in this form the external œdema is greater than in either of the other forms which I have described. Indeed the cases which I have seen of this form of the disease, bear a strong resemblance to that described by Burrerius as the cold œdema.* For the opportunity of seeing one of these cases (which are of rare occurrence) I am indebted to the kindness of Sir Henry Marsh and Dr. Croker, under whose care the patient was admitted into Stevens' Hospital; but as he was in a dying state on admission, I was unable to procure an accurate history of his case, but my friend Dr. Burton, who was then Clinical Clerk, has supplied me with his notes of the morbid appearances, and which I consider highly valuable, as they were taken by him without any reference to any opinion, or intending at that time to bear upon the present subject.

Case V.—John Anson, æt. 9, admitted into hospital, January 30, 1841, labouring under general anasarca, with ascites; the œdema of the extremities is remarkably white, cold, and hard; the face livid; respiration much oppressed, but not hur-

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walked across a stone floor, it was immediately attacked with symptoms of suffocation, orthopnœa, lividity of face, and died in half an hour from the commencement of the attack. On examination, there was found considerable effusion of limpid serum in the pleura and pericardium, which was evidently consecutive to the sudden impression of cold to the feet.

* "Frigidum eum voco, qui veri œdematis, aut anasarcæ speciem refert, et albus, et mollis, et aquosus, et nequaquam tactui calens apparet, et eam debilitate totius corporis, appetitus defectu, pulsu humili, languido, non duro, neque febrili conjungitur."—Tom. iii. p. 89.

ried; heart's action slow, labouring, and intermitting; urinary secretion has been suppressed for some days. There is a low, subcrepitating rale all over the posterior part of the chest, without dulness.

His mother stated that he had scarlatina a month ago, but appeared to be convalescing, when a few days ago she perceived his face to be swollen; his whole body then swelled suddenly. He had a violent attack of epistaxis on admission, which was checked by Dr. Burton; but he died in a few hours.

There was found general œdema of the lungs, with serous infiltration of the deep-seated cellular tissue in the cavity of the thorax, and straw-coloured fluid. The omentum and cellular tissue under the peritoneum appeared to be connected into a gelatinous mass, but without any trace of organization, or of any inflammatory process having taken place there. The kidneys were large, lobulated, and pale-coloured in their internal structure. The bladder was much thickened, contracted, with much œdema of its posterior part.

The next case was that of a boy, æt. 2 years, who was suffering from slight diarrhœa. Three weeks after a very mild form of scarlatina, he suddenly, at night, began to breathe heavily, when the nurse perceived that he was swelled. I saw him in a few hours after, but there existed then great general anasarca, dyspnœa, cold extremities, wretched pulse. He died in a few hours.

On dissection there was found a small quantity of serous fluid in the ventricle of the brain; there was general œdema of the lungs, with gelatinous infiltration into the cellular tissue at the root of the lungs and mediastinum. There were not any traces of inflammation in either the lungs or pleura, nor any tubercles. The omentum appeared to be cemented into a gelatinous mass, as also the cellular tissue under the peritoneum. The kidneys appeared to be perfectly healthy. The small intestines were healthy; but there existed thickening, with vascularity of the colon.

I think that these cases are highly important, and although not sufficient to draw any general conclusions from, yet they may set us on the track of future investigation; for as those modifications of dropsy, in which the pathology is most obscure and difficult, are frequently such as are not accompanied by apparent disease in any of the viscera, our practice must often be deficient in precision, as not having ascertained the true cause of the effusion. The sudden and severe symptoms in this latter class of cases, appeared to be caused by serous infiltration of the deep-seated cellular tissue; the primary obstruction being probably seated in the chest, but not being of an inflammatory character, and in this respect bearing a strong analogy to that disease of new-born children termed scleroma; the essential anatomical character of which is marked by the presence of sero-albuminous fluid in the subcutaneous cellular tissue, depending on obstruction or disease in the organs of circulation or respiration, and the true pathology of which is thus stated by Dr. Carswell in the Cyclopædia of Practical Medicine:*

"That the œdema of the cellular tissue is the result of inflammation, no pathologist, who has examined it, and whose judgment is not biassed by preconceived notions, will believe. Were such the fact, we should find sometimes, if not always, some of the products or effects of inflammation of the cellular tissue, such as coagulable lymph or pus, or softening, which we ourselves (or, we believe, any person else, not excepting even Mons. Denis) never once have met with."

Although some persons may think that the distinctions which I have entered into, are not required, and are of no practical utility, yet I trust that it may prove a sufficient apology, when they reflect, that in treating of a disease so often obscure and unmanageable as this very frequent consequence of scarlatina, every shade of difference which could tend to elucidate the subject, ought to be accurately observed and discriminated, so

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* Article, Induration, p. 681.

that in the end, like light shining from many quarters, the object of our researches may be fully illuminated.

In connexion with this subject, I take the opportunity of communicating some interesting observations which I have received from my friend Doctor Osbrey, Physician to St. Mary's Dispensary. The first case is remarkable, from the fact of dropsy appearing at a very early period, during the presence of the eruption. It occurred in a child aged three years, who had been previously in good health.

Dr. Osbrey writes: "I was called to see a fine child, æt. 3 years, who was covered with a deep, scarlet eruption; the throat was also affected, the tonsils being coated with a white exudation. The respiration was much hurried, but there was no physical sign of disease in the chest. There was high inflammatory fever; the urine scanty, and high coloured. The lower extremities were very much swollen, but did not pit on pressure. Dr. Lees visited the child with me, and we ordered bleeding, and mercurial treatment, with diuretics, containing small quantities of digitalis. It died on the fifth day from the commencement of the attack; effusion having taken place, into the different serous cavities, and the extremities being anasarcous. The eruption did not disappear, but assumed a very dusky hue previous to dissolution. There was no pain in the region of the kidneys. All the other children in the same house were affected with scarlatina, but recovered. (I could not procure a post mortem examination).

"I met with another remarkable case, in which the dropsy supervened on the second day of the disease, the eruption having suddenly disappeared. On the eruption being restored, by the use of the warm bath, the dropsy in its turn disappeared. In this manner the dropsy and eruption continued to alternate with each other, at irregular intervals, for several weeks; but the case ultimately recovered. I am not aware of any cause to which I could attribute the disappearance of the eruption."

ART. IX.—*Observations on some Morbid Affections of the Nail of the great Toe.* By A. COLLES, M. D., Member of the Royal College of Surgeons, &c. &c.

TO THE EDITOR OF THE DUBLIN MEDICAL JOURNAL.

"DEAR SIR,—Should you deem the accompanying observations on some diseases of the great toe nail of sufficient importance to merit insertion in your widely-circulating Journal, I shall feel much obliged by your giving them a place in your next Number.

"I remain truly yours,

"A. COLLES.

"22, *Stephen's-green*,
March 30, 1843."

THE morbid affections of this part, which are attended by ulceration, do not appear to me to have received that attention from writers on practical surgery to which they are entitled, both on account of their troublesome and painful character, as also on account of the very severe operations which have been suggested for their removal. Authors allude to these affections, as if they were only different stages of the same disease, viz. onychia, and for their cure have recommended the evulsion of the entire nail, and the excision of all the ulcerated parts, together with the matrix of the nail. I hope, however, to show in the following observations, not only that these diseases differ from one another in many essential points, but that also in all of them those very severe operations to which I have alluded may be dispensed with, and that the cure of these troublesome affections can be effected by means of a bloodless operation, and by external applications of a mild nature.

I shall first allude to that form of fungous ulceration which is described by writers under the title of "*the nail growing into the flesh.*" In this disease we observe, at the angle of junction between the anterior and external edges of the nail, an

ulcerated fungus, into which this angle, as also a portion of the outer edge of the nail, are more or less sunken. The colour of the fungus is rather florid, its surface is smooth, the discharge is purulent, in small quantity and tolerably healthy, unless the part have been irritated by too much exercise of the limb or by some external application or local injury; there is little or no surrounding inflammation, no enlargement of the toe, and the pain is in general trifling, unless during exercise, when the weight of the body on the limb causes the nail to press into the soft substance of the fungus, which thus often induces considerable uneasiness and lameness.

This disease does not appear to me to have any tendency to spread to, or to involve the adjoining parts, as I have seen cases in which it has remained stationary for some months, and in one for two years, at the end of which period the symptoms were in no way more severe than at the commencement, although most writers assert that it generally passes into malignant onychia. The origin of this troublesome affection is usually attributed to the effects of a tight boot or shoe, or to some accident in cutting or breaking off the end of the nail; in many instances, however, no cause can be recollected or assigned for its occurrence.

The unaided powers of the constitution do not appear capable of curing this disease, hence various methods of treatment have been employed by different surgeons, such, for example, as (according to Dessault) introducing a small plate of tin under the edge of the depressed nail, and insinuating it between the latter and the fungus, with the two-fold intention of compressing the fungus, and of elevating and everting the edge of the nail, so as to make the latter completely overlap the former. This plan of treatment has not stood the test of experience, and Dessault himself admits that it is very tedious, and often very painful for several days, that the fungus does not entirely disappear before two months, and that even after this, the metal plate must be occasionally worn to guard against a relapse.

Caustics of different sorts have been employed by others,

and Mr. Wardrop, in his paper in the 5th vol. of the Medico-Chirurgical Transactions, particularly recommends the argentum nitratum; I have employed this remedy myself, and have seen it also used by others, but I regret to say, not with that degree of success which Mr. Wardrop's recommendation would lead us to expect. I have, however, found some benefit from this application; under it the fungus has become reduced in size, also less irritable, but these improvements have continued only for a few days, after which the parts returned to their former condition.

Sir Astley Cooper in his lectures, and Dupuytren in his Leçons Orales, recommend an operation for the cure of this disease, the directions for performing which are essentially the same by each of these distinguished surgeons, viz., pass one blade of a scissors beneath the nail, from its anterior edge up to the root, then cut through the entire length of the nail, next seize the outer segment with a strong forceps, and by means of these tear it off the toe.

This operation inflicts a great degree of suffering, because in this disease the nail is not, as in onychia, separated from the vascular and highly sensitive matrix, except only through a small extent of space, not more in any direction than a quarter of an inch at its external angle, and, therefore, the scissors pushed upwards between the nail and the adherent matrix, and the forcible evulsion of the former by the forceps, must cause exquisite pain, which though of short duration can be regarded as nothing short of actual torture. A similar operation is also recommended by Mr. Liston in his recently published work on surgery. Notwithstanding these authorities in favour of this plan of treatment, I am by no means an advocate for this peculiarly painful and distressing operation, but on the contrary I believe we may be relieved from the necessity of performing it, and that we can in all instances effect a permanent cure, by a very simple operation, and one comparatively free from suffering; namely, by confining the excision of the nail to so much only as is already detached

from the matrix; all of this portion, as well as that imbedded in the fungus, must be removed.

To effect this I proceed as follows: while an assistant with a spatula presses down the fungus, I seize with a forceps (with strong flat blades, like those of the torsion forceps) the edge of that portion of the nail which is to be removed. I then pass a probe with a thin flat extremity beneath the nail, close to the fungus, as high as it can go, taking care to direct it towards the outer edge of the nail; this enables me to judge how far the nail is detached. I then take a strong crooked scissors of a large size, with one sharp pointed blade, this I introduce beneath the nail as far as the probe has directed me; with one stroke of the scissors I then cut off all this detached portion of the nail, while by means of the forceps I draw it away with moderate force: should this attempt fail to remove it, I then re-examine the part with the probe, and again introduce the scissors as high as they can be pushed; a second cut will then complete the separation, and admit of the easy removal of this part of the nail; this second attempt is sometimes attended with a sharp momentary pain, as the point of the scissors often enters a short distance into the sensitive matrix. The portion of detached nail presents no change of texture whatsoever; but a few drops of blood follow this operation. The only dressing required is a small bit of dry lint which is to be pressed firmly with the probe between the fungus and the edge of the nail. In a few hours the toe is free from pain, and the patient can walk without any lameness or uneasiness in three or four days after the operation. The dressing continues perfectly dry, and needs not be changed until the fourth day; at this time the fungus will be found much reduced in size, perfectly dry, and of a firmer consistence: a small bit of lint is to be reapplied as before, it should not, however, be pressed down so firmly as at the first dressing. In the course of ten or fifteen days the fungus will have entirely disappeared, and the parts be restored to a healthy state. I have never found it necessary to apply the olive-shaped cautery to destroy the fun-

gus, as described by Dupuytren. In the course of this treatment I also advise the patient (in compliance with the rules laid down by authors) to scrape the upper and outer surface of the nail with a sharp penknife, or with a bit of glass, an instruction, however, which the patient neglects, as soon as he feels himself relieved from pain.

It affords me much gratification to be enabled to state, that in no instance have I met with a case of relapse, after this operation has been efficiently performed. But the result of the operation itself is not in all cases so successful as I have hitherto represented, for in some instances, four or five days after the operation, the patient will complain of some uneasiness in the toe, when we shall find, on examination, that the dressing is moistened with a little discharge, and that a small portion of a whitish substance, like soft and swollen leather, is rising up through the fungus. This substance, may be, is regarded as a sort of accessory ungual filament, arising close to the original nail from the anterior and outer border of its matrix, and which is now altered in texture and direction; this filament is so soft, that it breaks and tears, if caught by the common dissecting forceps; in order, therefore to remove it (which it is necessary to do), we must seize it with the torsion forceps, and excise it with one cut of the scissors, passed well and fully beneath it; the lint dressing is to be reapplied, in the manner before mentioned, and the case will proceed without further interruption to a perfect cure.

Before I dismiss this subject of "the nail growing into the flesh," I may add, that I have seen many cases of this disease remaining unchanged for months, and even for a year and upwards; and I have never yet met with an instance in which the ulceration has extended, so as to induce that more severe disease of "onychia maligna," although some writers, of high reputation have described this latter as an increase or extension of the former.

There is another morbid affection, which occasionally en-

gages the anterior and inner angle of the great toe nail, and which causes considerable lameness and uneasiness, particularly on pressure; this affection is often mistaken for an attack of gout, particularly in those persons where such an attack may be expected, or even desired. In this disease there is no swelling or redness; but pain, on pressure, at the anterior and internal angle of the nail. On a close examination of this spot, we find that this angle rests on a hard, white mass of laminated, horny cuticle, which we can easily remove in bran-like scales, when we shall see a small cup-like cavity, without any ulceration or disease. The ungual angle appears thick and bulbous opposite this point, and the pain is caused by its pressing against this mass. This affection is easily cured, by scraping away all this substance, and excising the bulbous angle of the nail, and then interposing a little lint. Attention is required, for some little time, to remove any unhealthy growth of the cuticle or nail, and to secure the patient from any further uneasiness. Finally, I may remark, I have never seen this disease engage the outer angle, neither have I have seen that last described engage the inner angle of the toe nail.

ONYCHIA MALIGNA OF THE GREAT TOE.

This painful disease is often the result of some local injury, such as a heavy weight falling upon or rolling over this part; it occasionally occurs without any assignable cause. In some instances, the nail is found very much altered from the healthy state, being of a dirty brown or black colour, and adhering to its matrix in detached spots only, while it is separated from it both at the root, and to a considerable extent of its under surface. In other cases, it has been altogether thrown off, and a foul ulcer occupies its site; this ulcer presents jagged edges, and unhealthy surface, with an ichorous discharge, and extends along the toe above or beyond the matrix of the nail; both phalanges are swollen, so that the circumference of the toe is increased by at least a quarter of an inch, the last phalanx pre-

senting a very peculiar bulbous shape. When the original nail has been cast off, we usually see projecting from the sides, and tarsal border of the ulcer, a narrow plate of a white substance, not unlike white leather soaked in water; this sometimes forms one continuous shelf all round the ulcerated border, projecting in a peculiar prominent manner, that is, rather at an angle to, instead of being on a plane parallel to the dorsal surface of the phalanx. In some cases, this white substance (which is the result of an abortive attempt to produce a true nail) appears only in detached spots or flakes, the intermediate parts of the ulcerated margin being devoid of any such growths; they are most frequently seen at the posterior and anterior angles of the nail, but occasionally in other parts of the circumference. The surrounding integument is discoloured, being often of a livid or purplish tint; it is also indurated, and exudes a copious perspiration, of a peculiar heavy odour. This ulceration sometimes induces caries of the bone, and even extends to the phalangeal articulation.

All modern authors concur in the opinion, that onychia depends upon a morbid condition of the secreting matrix of the nail, and that it can be cured only by removing, by excision, this diseased organized structure; and no writer, that I can recollect, encourages the idea of a permanent improvement being possibly effected by any other local treatment. I admit that the operation of the complete removal of the entire of this diseased matrix does effect the cure, in a very short space of time, provided the bone or joint is not diseased (in which case, amputation is inevitable), and that, subsequently, rest and simple dressing will alone accomplish the healing process, the place of the nail being supplied by a dense, hard skin. But still this operation is not without objection; it is always attended with severe pain, and which sometimes continues for many hours; it also too frequently happens, that the disease returns in some one spot or other, owing to the matrix not having been wholly eradicated, which indeed it is often extremely difficult to do; for

the shape of the toe is so bulbous, and so deformed, the textures so changed and so condensed by chronic inflammation, and the edges of the ulcer are so raised over the part to be removed, that even an anatomist cannot easily recognize the relations of the several tissues involved in the disease, or ascertain the exact extent of the substance to be excised; during the operation also, the flow of blood is so profuse, as to prevent the operator distinguishing one texture from another; accordingly, it occasionally happens, that the patient, having enjoyed an immunity from pain for some days after the operation, becomes alarmed by feeling a slight return of his former uneasiness, on any exercise of the limb, or on any pressure on some particular spot, generally on one of the angles of the original ulcer; and the surgeon, on a careful examination of this spot, finds there is still a little ulceration, and a fresh production of that ungual growth, already described as abnormal both in texture and in direction, and which indicates the persistence of some of the diseased matrix. This will again act as a foreign body, exciting constant irritation, and will soon lead to a renewal of all his former sufferings, and for the removal of which, the excision of this morbid tissue must be repeated. Any surgeon who has experienced this disappointment can, I am confident, bear testimony to the horror with which the patient has contemplated, and the reluctance with which he has submitted to, a repetition of this peculiarly painful operation. I have known it necessary to repeat this even a third time; and therefore, whenever these secondary operations become necessary, I should remind the surgeon, that, to insure success, he must cut much more deeply and extensively than he might at first suppose to be necessary.

Notwithstanding these objections to this operation of excising the diseased matrix, I yet admit, that when it is properly performed, it will be followed by a speedy and a perfect cure; however, I am of the opinion, founded on some experience, that this disease may be cured, without resorting to such a painful measure, by external applications alone, which

are unattended with pain, and which, in a few days, will induce a considerable amendment, and even a perfect cure in the course of three or four weeks. The plan of treatment which I have pursued for some years, and, as yet, with invariable success, is as follows: I confine the patient to bed, and direct a poultice to the toe for two or three days; I then cleanse the ulcer carefully, by directing on it, from some height, a small stream of tepid water from a sponge; I next cut away as much of the loose nail as I can, without paining or irritating the sensitive surface around, and then I fumigate the part by means of the mercurial candle, containing 3i. of the hydr. sulphuretum rubrum (olim cinnabar), to two ounces of wax.* This fumigation is to be applied night and morning, and, after each, the toe should be gently enveloped in lint or linen, lightly spread with ung. spermaceti. In four or five days, the patient will express himself as considerably relieved; the discharge from the ulcer will be found of a healthy, purulent character, and the appearance of the whole part much more favourable. The fumigation is still to be persevered in, and all projecting portions of nail to be closely cut: I consider this latter direction as very essential, as thereby the mercurial fumes can have more free access to the surface of the ulcer. In proportion as the ulcer improves, it is interesting to observe so does the condition of the growing nail; it acquires not only its natural firm and horny consistence, but also assumes its proper horizontal direction. For some time after the general surface of the ulcer has been healed, there still remain small spots of ulceration, generally at the angles, around some white germs of new nail; against these points, the full force of the mercurial vapour should be directed; this can be effected by adding a small conical ivory tube to the funnel. I attribute much of the success of this treatment to the use of the mercurial candle, in preference to fumigation in the ordinary mode. I must observe, that during this course of treatment, the patient must

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* See Colles's Practical Observations on the Venereal Disease, p. 58.

absolutely abstain from walking, or even standing on the affected limb; exercise but for a single day will counterbalance all the amendment produced by a week's rest and fumigation. In the cases which I have thus treated, I have had no recourse to any constitutional treatment, or to any peculiar regimen; no doubt, cases must occur in which there will be derangement of the general health, and which will require suitable constitutional remedies, before we can expect to cure the local disease by mere local applications. I make no doubt that this ulceration may sometimes arise from, or be so intimately connected with some constitutional derangement, as to be incurable, without the aid of constitutional treatment. Mr. Wardrop, in his paper above alluded to, has recommended a cautious and judicious use of mercury, and has recorded some instances of its success.

The uniform success which has attended this plan of treating onychia, by mercurial fumigation, during the last few years I have adopted it, leads me to hope that the surgical operation I have already alluded to may in future be dispensed with; but even should more extended experience prove that I have been too sanguine as to this expectation, yet I feel persuaded that this practice cannot be injurious, and that it will never fail to improve the condition of the ulcer, and of the surrounding parts, reducing the enlargement, and removing the deformity of the toe; so that, even should the operation be ultimately necessary, the surgeon will be better enabled to ascertain the exact situation and extent of the disease, and thus, by a single operation, to remove the whole of the matrix so effectually, as to secure his patient from any relapse; therefore, the time which has been occupied in the fumigating process cannot be considered as lost or misapplied.

ART. X.—*On Indigestion, considered in Connexion with Air in the Stomach; and a general Theory for all gaseous Collections occurring in the living Body.* By WILLIAM ED. STEELE, A. B., M. B. Eblan., Member of the King and Queen's College of Physicians; one of the Physicians to the Sick Poor Institution.

[Read at a Meeting of the College of Physicians on Saturday, March 18, 1843.]

"And be it always remembered that, although hypothesis is not truth,—or we should rather say is not truth ascertained,—yet, when legitimately used, it is the most ready and effective of all the means in our power for acquiring truth. It is by hypothesis, framed with at once a bold and a cautious sagacity that the boundaries of science are extended: and it is in the use of this method that facts and principles which seemed to be placed far beyond the reach of human intelligence, have at length been brought to form a part of our well-established modern philosophy."—*Physical Theory of another Life.*

ON comparing the state in which medicine, as a science, existed so recently as half a century back, with the position it at present occupies, we cannot fail being struck by the many valuable improvements that have been effected in this important branch of knowledge. The history of medicine, during the period referred to, furnishes us with a knowledge of the real source of these advances, and enables us unhesitatingly to affirm, that, to the increased zeal in the practice of morbid anatomy,—on which rests the entire structure of modern pathology,—may these improvements be almost exclusively attributed. The physician, formerly blinded by prejudice, and involved in speculations as ridiculous as untrue, can now boast of many advantages over his predecessors; for, by his familiarity with the appearances of disease in internal organs, to be acquired by diligent *post mortem* examinations alone, and his knowledge of the connexion of these appearances with certain invariable symptoms in remote parts, to be reconciled with these morbid alterations only by sound pathological reasoning, he is enabled to predicate, in many instances, with a certainty, almost mathematical, of the seat, nature, and progress of disease, by the disturbances it ex-

cites in distant parts of the living system; and treatment, hitherto empirical, has yielded to measures of cure, founded on principles as consistent with reason as those on which the operations in most other sciences are founded.

Thus it is that the nature of stomach diseases has, in common with others, recently received so much light. The bilious pathology, and blue-pill practice of Abernethy, and our predecessors have yielded to more correct views, and treatment less irrational; and those diseases, which, but a few years since, were invariably attributed to deranged states of the biliary apparatus, have by the labours of the French School of Broussais, followed by many eminent pathologists of this and the sister kingdoms, been proved to consist in obvious morbid changes of one or more of the structures which enter into the composition of the stomach.

To Doctor William Stokes*, and more recently to Doctor Osborne† we are indebted for valuable contributions to our knowledge of these diseases, until lately, very imperfect. The latter, especially, has succeeded in distinguishing affections of that organ hitherto confounded, and suggesting a rational line of treatment for each, founded on these distinctions; so that the physician can now be as little justified in referring all the symptoms of stomach diseases to the too convenient term dyspepsia, as but lately he should have been in a decision, that such were the results of bilious derangements.

Thus it appears established, that primary diseases of the stomach, according to Dr. Osborne's arrangements, are to be considered with reference to the parts of which the organ is composed, viz. inflammations, or irritations of the mucous membrane, and irritations of the gastric glands; functional diseases, including indigestion, forming a separate class. I shall occupy the en-

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* Cyclopædia of Medicine, Art. Gastritis, &c.

† Propositions relating to Diseases of the Stomach in the Dublin Journal of Medicine for July, 1835, Jan., 1839, Sept., 1841.

suing pages with some considerations which involve this last affection.

A hasty sketch of the healthy digestive process may facilitate the comprehension of my views:—When food is received into the stomach, which may be regarded as a muscular bag having a constant tendency to approximate its sides, that peculiar acid solvent, the gastric juice, which, save in certain morbid conditions, is never present in the empty stomach, is discharged from the glands, or follicles destined for its secretion. By the action of this matter on the food, the first step in the digestive process is gained, and the substance called *chyme* is produced. This, by the constant attrition produced by the *vermicular* or churning motion of the stomach, is removed from the surface of the mass, or its individual portions, and a fresh surface is exposed to the action of the gastric juice to undergo a similar change. The chyme, as soon as formed, is forced, by the *tonic* muscular contraction of the stomach, through the pylorus into the duodenum, where, meeting with the bile, and pancreatic secretion, a creamy fluid, the proper nutrient of the blood, called *chyle,* is the result of their union. This process is continued until all the food is digested.

It had long been the opinion of physiologists, but which it has been reserved for Dr. Beaumont,* in his late interesting experiments on St. Martin, to establish, that the gastric juice is secreted in health in limited quantities, and that each kind of food requires a certain definite proportion of this solvent to ensure its perfect conversion into chyme; but that if indigestible matter be received into the stomach, after a short time, perceiving its efforts to be ineffectual to resolve the mass, the supply is suspended, and the indigested substance is either ejected from the stomach, or driven through its pyloric orifice; not always, however, without having excited symptoms of a distressing character, indicative of indigestion or dyspepsia.

The most frequent group of symptoms characteristic of this

* Beaumont on the Gastric Juice.

disorder is as follows :—A sensation of fulness in the region of the stomach, with a feeling of constriction about the throat and fauces, giving the sensation as if a tight bandage encircled the neck, and thus, by impeding the circulation, gave origin to a headach, of a peculiarly dull, oppressive character. The tongue is generally observed to be pale, and cool; the skin dry, and shrivelled, and the pulse depressed; the appetite, however, does not seem, in general, to be impaired. Moroseness of disposition, an incapability for exertion, and an unconquerable feeling of misery, are the mental manifestations of the disorder. All the symptoms, however, generally obtain relief after a meal, especially of spiced meats; but if no circumstances occur to remove the malady, or the causes whence it originated, these distressing signs of its presence again soon manifest themselves. Thirst, nausea, anorexia, or acidity in the stomach, are not essential characteristics of the disorder, being expressive of other pathological conditions, which may, or may not, coexist; to which I may also add the remark, that from the many sympathetic relations existing between the stomach and other organs of the body, a great diversity in the symptoms of dyspepsia, in different individuals, may be observed; the heart, kidneys, liver, salivary glands, eyes, brain, may often, but not constantly, be affected. In almost all cases, however, there is torpidity of the bowels; and, to this I must especially direct attention, *air is discharged from and felt in the stomach and bowels, both before and during the attack.*

From the frequency of flatulence, in company with indigestion, it has ever been regarded as a *symptom* of this disorder, but, I conceive that we may, with far more truth, consider it as a *cause* of the affection. The reasons upon which I found this opinion are, to my mind, neither few nor light, and I trust that, in the course of this communication, I shall be enabled to establish the truth of that position.

Thus, the origin of these accumulations of gas in the alimentary canal is the object which first presents itself to our notice to

determine,—an inquiry of a nature in itself sufficiently curious and important, and one which, as far as I have been able to discover, still remains undecided; that such is the case, the following quotation from "Andral's Clinique Medicale" may, perhaps, be sufficient to show:—"The cause, under the influence of which this great disengagement of gas takes place in the '*intestines*' is still unknown; we cannot attribute it to inflammation, nor ulceration; for this meteorism exists as often in cases where, after death, the '*intestines*' are found free from all appreciable lesion, as in those where they are found diseased." . . . . . "All we can say is, that this great disengagement of gas belongs exclusively to the class of diseases now under consideration."*

But for reasons which will presently be obvious, I find it essential to my purpose not to limit this inquiry to gas found in the stomach and intestines alone, but to include in the investigation all those cases in which air has been observed to accumulate in the living body either as idiopathic emphysema, or in other forms, to which I may subsequently allude.

IDIOPATHIC EMPHYSEMA, AND OTHER METEORISMS CONSIDERED.

Cases of idiopathic emphysema, or collections of air in the cellular tissue composing the substance of the body, are of extremely rare occurrence; a few, however, are on record, to which I must now refer.

Case I.—In the London Medical and Physical Journal for June, 1831, a remarkable case, by M. Bally, and extracted from a French Journal, is recorded. A man had been attacked by typhous fever, in the course of which disease there suddenly appeared an effusion of air under the skin, at first, of the limb of one side, but ultimately of the whole body. During the examination, after death, upon cutting the integuments of the limb where it first appeared, and which was more swollen than the rest of the body, a great rush of air took place, which burned

* Spillan's Translation, p. 741.

with a blue flame, on the approach of a candle; the abdomen and intestines were inflated by a gas possessing similar properties; and the lymphatic glands, distended with a like production, burst with a smart explosion, on being applied to a flame. No chemical examination of the gas is reported to have been made, but from its inflammable nature, it is probable that its chief constituent was carburetted hydrogen.

Case II.—The following case of emphysema, not proceeding from local injury, is related by Mathew Baillie.* A girl, aged ten years, was admitted into St. George's Hospital, with general dropsy. Two days before her death, Dr. Baillie was requested to see her in consultation; she then appeared highly dropsical. Upon attempting to feel her pulse, a crackling sensation was communicated to the fingers, in consequence of the presence of air, and the skin was so much elevated, that the pulse could be but indistinctly felt. The effusion of air was at length detected to be general, accompanied by a considerable dropsy. The girl died next day, and the dissection disclosed the following particulars. Air was diffused through the cellular membrane of the trunk, arms, and thighs; the stomach was distended, as far as it could stretch with air, and the whole intestinal canal was moderately filled with it. The air, too, had penetrated into some parts of the cellular tissue of the stomach and intestines; the laminæ of the peritoneum, composing the mesentery, were separated at some distance from each other by the air which occupied its cellular membrane; and the small vessels on the stomach and intestines were universally filled with it. A great quantity of gas was found between the pleuræ, and in the pericardium. Large collections of serum were also present. Dr. Baillie, in his remarks on this case, says, "I am ignorant whether the air found in the intestinal canal in this case, and the cellular membrane, was the same; but I have twice tried the air which is accumulated in the intestinal canal, it was

* Transactions of a Society for the Improvement of Medical and Surgical Knowledge, vol. i.

not inflammable, but extinguished flame, and rendered lime water turbid," qualities peculiar to carbonic acid gas.

Case III.—Huxam* relates the case of a sailor, who was seized with a sore throat and putrid fever. He was bled, and the blood was found in a loose dissolving state. On the seventh or eighth day, an emphysema appeared on the face, trunk, and breast, especially on the right side. By fomentations with camphorated spirits and vinegar, it disappeared; but the man continued for a long time very weak; his gums were spongy, and bled on the slightest touch or pressure.

J. P. Frank affirms that he has observed effusions of air to take place in five successive paroxysms of a tertian ague, and subside in the intermissions.† He also states, that towards the close of epidemic fevers in Italy and Germany, during the latter part of the eighteenth century, emphysemata were of frequent occurrence.‡

Dr. Graves is reported to have mentioned a case of emphysema having occurred after an excessive hæmorrhage.§ In gangrene, also, it is by no means infrequent, accompanied by flatulence of the stomach and intestines.

Case IV.—A case of exhalation of air from the skin is nearly thus related by the late Sir F. Smith. An hypochondriac gentleman was frequently subject to large collections of gas in the stomach, and affirmed, that he frequently passed air from his bladder. He was requested to attend this gentleman, while in the bath, to witness a copious exudation of air from the pores of the skin, appearing in the form of minute bubbles on its surface, and which were quickly renewed on being wiped away by the hand. At the same time, large quantities of air were being discharged from the stomach.‖

Cases V., &c.—The following cases are translated from

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* Medical Observations and Inquiries, vol. iii. p. 33.

† De curand. Hominum Morbis, lib. iv. p. 48.

‡ Ib. p. 46.

§ Dublin Journal of Medical Science, vol. xviii. p. 455.

‖ Ib. vol. xviii. p. 456.

Frank's work before quoted; they may be found therein under the head "Pneumatosis."* This celebrated physician states, that he was consulted by the daughter of a lawyer at Brussels, who was subject to hysteria. During one convulsive attack, her neck, which was before spare, became in a few minutes so much swollen, that from the head to the breast it appeared like one thick column. Her breasts increased to an enormous size, and felt extremely hard. "We often," he writes, "recollect now, having observed the throat and neck to swell in hysterical patients, sometimes on one side only, and quickly to subside again." A lady of noble birth sought his advice under the following circumstances: she had for some time suffered from severe daily pains of the abdomen, and once when dancing, "cùm saltationis a socio volutaretur cum impetu," she unexpectedly eructed copious discharges of air "et maximè sonoros." From that time she was attacked with frequent pains of the limbs as if from rheumatism, which, on having them rubbed, "explosis pluribus mox flatibus," immediately ceased. She described the flatus to have proceeded from the part which was rubbed; before this she had suffered from chlorosis, and absence of the menstrual discharge. A merchant of Bavaria had been for some time labouring under hypochondriasis, accompanied by flatulence; when, at one time, on raising his hand to his head he perceived it to be covered over with a number of small soft tumours, on pressing which, "centum ducentosque adeo flatus per anum, magnâ cum violentiâ explodebat." Frank also mentions the case of a lady whose breasts, body, and limbs were swollen in a wonderful degree at the same time that she was nearly suffocated by flatulence of the stomach, but as soon as she had employed friction, a great discharge of air took place by the œsophagus, followed by immediate relief.

In the first case related, in which the air was of an inflammable nature, chemical changes of no ordinary nature must have

* Op. Cit. lib. vi. pp. 50, &c.

taken place; as those gaseous productions commonly occurring in the human body, and which have been submitted to chemical examination, give results directly opposite. It is, indeed, of so singular a nature, no similar case being on record, that I am induced to look upon it as an exception, and to limit this inquiry to the consideration of the gases of more frequent occurrence, the more prominent features of which are, that they are not inflammable, that they are incapable of supporting flame, and for the most part devoid of smell. Thus, then, dismissing from our notice the *nature* of the effused gas in that solitary case, I beg to direct attention to the following facts and conclusions in reference to the present subject, which are suggested by the perusal of all. 1st. That the appearance of the air in the alimentary canal, in the cellular tissue generally or elsewhere in the same individual, are to be considered as different manifestations of the same disorder, the origin being common to all. For, in Case I. the identity of the gas, wherever found, is proved by it all possessing similar chemical properties. In the second, though direct proof of this fact is wanting, yet from observing it to have been contained *in the stomach,* as well as *between its coats,* and the layers of the mesentery, in the pleuræ and pericardium, we cannot but admit, that the similarity of the gas and the community of its origin are highly probable; this as a general conclusion is rendered justifiable, by observing that in the cases related by Frank,—V., &c.,—discharges of air took place from the stomach and bowels, at the same time that there were evidences of gaseous collections in other situations. And in that related by Sir Francis Smith,—IV.,—the eructations and exhalation of air from the skin were simultaneous. 2ndly. That these effusions occurred in one case after an excessive hæmorrhage, and in another in typhous fever, the early treatment being a needless or injurious blood-letting. 3rdly. That with the exception of Case I. there is no evidence that any decomposition of an ordinary character had set in, of which we might imagine the gas to be a product; but 4thly, that the source of the gas is suggested by

a post-mortem appearance in the second case, in which the air occupied the minute blood-vessels of the stomach and intestines; hence the supposition of the more immediate source of the gas being an exhalation from the minute blood-vessels, ramifying—when idiopathic emphysema is produced—on the membranous septa composing the cellular tissue, or when these gaseous collections occur in the digestive or other mucous cavities on the inner surface of these organs. And, further, for reasons which will presently be adduced, I think we may safely affirm, that whatever were the remote causes which produced the gaseous exhalations in these extreme and rare cases, they act in producing the very common affection of flatulence of the alimentary canal, differing from them in intensity alone.

Collections of gas in the alimentary canal have been observed most frequently to occur under the following circumstances: The intestines of those recently dead are often found inflated with air, and this meteorism appears to have taken place long before the putrefactive process, in which many gases are evolved, could have set in. In typhoid fevers, *tympanitis* is a frequent symptom, and one denoting great prostration. During the course of many acute diseases attended with depletions, whether symptomatic or remedial, vast quantities of air are not infrequently discharged from the stomach and bowels. Flatulence, too, is a common affection in old and debilitated constitutions,—in chlorotic females, especially, whose vascular system is in a state of depression. It occurs on the withdrawal of accustomed stimuli; such as fasting, or the change from animal to vegetable diet, or the exclusive or occasional use of the latter without aromatic condiments. In fact, any food which will not afford a sufficient supply of chyle to the blood, or any cause which will diminish, directly or indirectly, the full quantity of blood circulating in the vessels, or, by way of corollary, so far lessen the tonic contractile power of the vessels themselves, as that their calibre may be coarsely imagined to exceed, at any time, the quantity of fluid circulating in them, will be found to favour these gaseous

accumulations. In confirmation of these views, we may observe, that flatulence is of frequent occurrence in infants, who are insufficiently nursed, or whose nurses are not in robust health; especially during the first three months of motherhood, when the woman being weakly after her recent confinement, her milk is as yet deficient in that amount of nourishment which is requisite for the child, and which it acquires with the mother's returning strength; and for the same reasons we may observe the child to suffer from a similar affection, whenever its nurse is operated upon by purgative medicine, or when the current of nervous and vascular action is turned towards a new channel, such as the occurrence of menstruation or pregnancy before the child is weaned.

I may here also remark, that those diseases which are characterized by an impeded circulation of blood, such as asthma, and some forms of heart disease, are ever accompanied by a distressing flatulence, which aggravates so extremely the sufferings of the patient afflicted with these diseases. This, however, will be again considered.

The quantity of air discharged from the stomach and bowels is often of enormous amount. I lately witnessed the case of a lady, from whose stomach the discharge of air lasted for upwards of an hour, without intermission; this occurred more than once, and while the stomach was empty; dyspeptic symptoms were complained of at the same time. A case is related by Frank, who had the stomach preserved, in which this viscus reached to the pelvis, over the intestines; during the life of the patient, it not only pushed up the liver and diaphragm, but prevented their descent; and the distress was so extreme, that the patient entreated that an exit might be made for the air, by the introduction of a sharp instrument through the left hypochondrium into the stomach.*

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* Vol. iv. p. 43.

COMPOSITION AND SOURCE OF THE GASES.

If we examine the explanations that have been offered, to account for these accumulations of gas in the alimentary canal and cellular tissue, we shall find that we shall be compelled to look for the sources of the affection in circumstances remote from local change, in some peculiar condition of the constitution, and, with a high degree of probability, of the vascular system in particular.

The sources whence these gaseous collections in the human body have been said to originate, are,—in the stomach and intines—first, from atmospheric air swallowed with the food; second, from decomposition of the ingesta, or—in idiopathic emphysema—of some of the constituents of the body.

That atmospheric air is swallowed with the food, is undoubted; but the quantity is very insignificant, and being seldom retained for any length of time, it is of little or no inconvenience. The second source, decomposition of the ingesta, is equally improbable; because it has long since been demonstrated by Spallazani, that any changes, such as *putrefaction*, are not only prevented by the presence of the gastric juice, but that this secretion restores, in a short time, tainted meat to its original sweetness. This antiseptic property of the gastric juice has been verified by Dr. Beaumont, who found that by immersing a portion of meat in this substance, it retained its sweetness for a considerable time, although exposed to a temperature of 100° F. And in no case, though experiments in numbers have been instituted by investigators of various countries, on both natural and artificial digestion, in and out of the stomach, and under every grade of advantage and disadvantage of circumstance, has a process similar to *fermentation* been reported to have taken place; in consequence of which, men have been obliged to abandon the theory of fermentation, proposed to account for the digestive process, as untenable; and we know also, that oxygen, which is essential to the process of acetous

fermentation, which alone can take place in the living system, is never present in those situations where the collections of gas are of most frequent occurrence, and in largest quantities. Again, those cases in which air accumulates in the stomach and intestines, after long fasting, or during the course of any acute disease, of which diarrhœa is a symptom, or for which purgation has been employed as a means of cure, are proofs sufficient that the gas cannot be regarded as a product of decomposition of the *contents* of these viscera.

In order to account for this production in idiopathic emphysema, it has been asserted that the gas in this disease was the result of a process of putrefaction, which had been established in some of the constituents of the living body, and *putrid fevers* are brought forward as examples to support this supposition. But, in these diseases, commonly said to be *putrid*, or which are marked by extreme prostration of the vital powers, I consider it as a mere assertion to affirm that a *putrid* state of any of the vital constituents had set in; for, in some examples of this disease, there is little or no extrication of gas, even into the intestines, and the green colour of the integuments and fœtid odour, characteristics of putridity, are not present. In many cases also in which air *is found* in the cellular tissue after death, these evidences of putrefactive decomposition are altogether absent. In Case III., related by Huxam, in which emphysema supervened on a typhous fever with sore throat, it might appear that the air was a product of putrefaction:—but in any case, it is a well-established fact that before putrefaction can take place, the absolute death of the part must precede it; and if in this instance such an event occurred, an extensive sloughing of the part must necessarily have followed, and recovery most likely would have been impossible. It is, indeed, not easy to imagine, that changes such as these should occur *during life*, which, under ordinary circumstances, are not only preceded by absolute death, but even subsequent to that event, the lapse of a certain length of time is necessary before

the putrefactive process is established, and a longer before any appreciable amount of a gaseous material is evolved; even the appearance of the air in incipient gangrene admits of a more rational explanation, than by the supposition of its being a product of the putrefactive decomposition.

A case quoted by Andral,* as related by Jules Cloquet, confirms me in these opinions. A scrofulous patient, in the last degree of marasmus, died in *l'Hôpital St. Louis*, of carious vertebræ. "The body was opened shortly after death, and before it had begun to show the least sign of putrefaction. There was considerable emphysema of the cellular tissue that unites the different coats of the stomach, so that its parietes appeared to have been inflated, and in several places were near an inch in thickness. The mucous membrane, which was embossed, was pale, and free from any appreciable lesion. The two anterior folds of the great omentum, which are attached to the great curvature of the stomach, were also separated from each other by gas, and the same was the case with the small omentum."

To this I may also add a case of aortic aneurism, proving fatal by rupture into the œsophagus, related by Doctor William Stokes in his work on Diseases of the Chest, in which the liver was found filled with air, to such an extent that it floated on water, and crepitated intensely on pressure. "No putrefaction occurred in this case."—p. 476.

The evidence afforded by these examples establishes the fact, that accumulations of air in the stomach and bowels, and in the meshes of the cellular tissue, may, and do occur independently of decomposition of the contents of the former, or putrefaction of any of the vital constituents.

Let us now consider the supposition that the effused air derives its source from the blood-vessels, its presence in the blood being predicated thereby.

The gases found in the stomach and intestines are oxygen,

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* Pathological Anatomy, trans. by West, vol. ii. p. 204.

carbonic acid, nitrogen, hydrogen, sulphuretted, and carburetted hydrogen. The first mentioned has not been found but in the stomach alone, its source being obviously in the atmospheric air swallowed with the food. The proportions of the remaining gases are extremely variable, but on the whole it may be stated that carbonic acid and nitrogen predominate, the former being frequently so high as 70 per cent., seldom so low as 30, the latter having 70 for its maximum, and 18 for its minimum; while sulphuretted, carburetted, and pure hydrogen do not occupy above one-tenth of the whole.* With respect to the source of the last mentioned gases, I am quite unprepared to offer any suggestions, but imagine, that, as they are so frequently, and almost exclusively, found in the lower intestines, they may be considered rather in the light of natural excrementitious products, than as the result of morbid action; and, as they form a very small proportion of the combined gases, I shall confine myself to the attempt of proposing a theory to account for the appearance of those which predominate in so eminent a degree, viz. nitrogen and carbonic acid.

It has long since been observed by Allen and Pepys,† and confirmed by all subsequent physiologists, that in ordinary respiration oxygen is consumed, and carbonic acid expired in quantity of nearly equal amount to that of the former. These changes not only take place in the lungs, but may also be shown to be effected by the *blood* when removed from the living body. Müller,‡ Christison, and others state, that they have agitated freshly drawn venous blood in a closely stopped phial with atmospheric air, the results of which were,—similar to that above stated,—that part of the oxygen was found to have been replaced by carbonic acid, accompanied by a change in colour from purple, characteristic of venous blood, to red, that of arterial.

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* Majendie's Physiology.

† Philosophical Transactions, 1808–9.

‡ Müller's Physiology, trans. by Baly, vol. i. p. 342.

Professors Magnus, Müller, and others have obtained carbonic acid, nitrogen, and oxygen gases from the blood.* The first named experimenter states, that carbonic acid *predominates* in venous blood, and oxygen in arterial; while the quantity of nitrogen does not materially differ in either. Müller and others have observed that carbonic acid may be extracted from venous blood by means of the air-pump, not however until rarefaction had advanced so far that one inch of mercury could alone be supported in the guage.† But, by agitating fresh venous blood with oxygen, this gas may readily be obtained, and, which is especially worthy of attention, with hydrogen or nitrogen, gases which do not enter into the composition of carbonic acid.‡ Nitrogen cannot be obtained by means of the air-pump, but if a stream of hydrogen, oxygen, or a mixture of both, be passed through fresh blood, its presence becomes manifest in considerable quantities. This had been proved long before by Allen and Pepys,§ who caused animals to breathe a mixture of hydrogen and oxygen, when nitrogen formed a portion of the expired air. Edwards has stated that the absorption of nitrogen by the lungs is variable in amount; he observed that at one time it was greater than at others, while again its exhalation equalled, or slightly exceeded its absorption. He found also, that independently of other causes, the absorption of nitrogen was more active in summer than in winter, at which season its absorption often entirely ceased.‖

From the preceding facts it is conclusive, that the carbonic acid which is found to occupy the place of the oxygen in respired air, derives its source from the blood; and that nitrogen appears to be both absorbed by and exhaled from the lungs, its presence not being manifested as a product of expiration, except when it forms no proportion of the gas inspired. And it also

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* Op. Cit. p. 345. † Ibid. p. 344.

‡ Med. Gazette, 1833–4. § Phil. Trans. 1829.

‖ Influence of Physical Agents on Life, translated, pp. 226, 229.

appears conclusive that these ordinary phenomena of the absorption and exhalation of gases in respiration are not produced by any specific agency of the lungs themselves, but in obedience to the physical laws which regulate the solution, and mutual admixture of different gases, the lung being only the apparatus by which the vitiated expired gas is replaced by fresh atmospheric air.

And in accordance with these observations, the respiratory process may be thus briefly stated. The oxygen of the atmospheric air is rapidly absorbed by the blood-vessels of the lungs, in which it is retained in simple solution with the blood, until, driven by the heart's action, it arrives at the capillary extremities of the vessels in remote parts, where, in the peculiar changes that there take place, its oxygen disappears, and carbonic acid is formed. The blood has then changed its colour from the red of arterial to the purple of venous blood, and passes through the veins into the heart, to be propelled into the vessels of the lungs, again to be submitted to the action of the air, when carbonic acid is exhaled, oxygen re-absorbed, and the red colour restored. The nitrogen of the atmosphere being also absorbed, passes through the whole system unchanged, and is again exhaled by the vessels of the lungs.

But it is not in the lungs exclusively that we are to look for these phenomena of respiration, for we shall presently see that changes precisely similar take place in the air when in contact with almost every living surface in the body.

Experiments are detailed by Dr. John Davy in the Philosophical Transactions for 1823, with a view to ascertain the effects which the pleural surfaces of dogs exert on different gases. The results of these experiments were, that oxygen was absorbed by, and carbonic acid exhaled from the pleural surfaces, while nitrogen appeared to be either or both absorbed and exhaled. Abernethy has maintained, that the skin absorbs and secretes certain gases; and Collard de Martigny has detected carbonic acid and nitrogen—the products of ordinary ex-

piration—in the cutaneous exhalation.* These results have been confirmed by Cruikshank and other investigators.† And in the alimentary canal, in which the function of EXPIRATION alone can be performed, are discovered nitrogen and carbonic acid, forming the great bulk of the gases contained therein.

Thus we have reason to conclude that the living body is one great breathing machine; in other words, that the changes effected in ordinary inspiration and expiration are performed by every surface in the body placed under circumstances favourable to the action of the air. The truth is, that the lungs possess the power of effecting those changes more readily and perfectly than other organs, only, inasmuch as they have a larger surface exposed to the air, the blood-vessels being very numerous, and branching almost naked upon the surface of the bronchial tubes. When atmospheric air is thus absorbed by the various textures of the body, it enters into the circulation, where it exists in a state of simple solution, all the oxygen is easily disposed of for the purposes of life, but nitrogen and carbonic acid must find an exit somewhere, as they do in *ordinary* cases by the lungs, and in minute quantities by the skin or other parts; but in *extraordinary* cases, whenever the quantity of air absorbed is increased, by other structures also, in which the minute ramifications of the blood-vessels are unsupported by any dense tissue, as in those situations where they ramify upon the surface of an internal mucous membrane, as that of the stomach and intestines, giving rise to gaseous distention of these organs; and in cases where the amount of the air contained in the blood is still farther increased, and where the soft solids are considerably altered in density and cohesion, as in gangrene or other morbid conditions, there the effusion may also take place with readiness, and produce idiopathic emphysema.

When we know that in the ordinary respiratory process, according to the experiments of Allen and Pepys, twenty-seven

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* Journal de Physique, 1830. † Müller's Physiology, p. 270.

cubic inches of carbonic acid gas alone are exhaled from the lungs in one minute of time, we shall cease to wonder at the vast collections of air that have been observed to accumulate in the cellular tissue of the body, or in the stomach and intestines in certain abnormal conditions of the living system.

But the source whence is derived, and causes which predetermine this increased amount of air in the blood, remain yet for consideration.

Let us but bring to our remembrance Majendie's experiments upon the influence which a plethoric state of the vascular system, or its opposite condition of comparative emptiness exert in retarding or facilitating absorption, extending the application of this doctrine to gases, and the causes which produce an increased quantity of air in the blood, and the reasons wherefore the absorption of the air should at one time be more active than at others, will be at once apparent. This distinguished physiologist has proved to demonstration that absorption by the blood-vessels is retarded, or completely suspended, by a state of congestion or plethora, while it is facilitated in a remarkable degree whenever the vascular system is deprived of any considerble amount of its circulating fluid. And thus it is, that whatever diminishes the full amount of blood circulating in the vessels will accelerate the absorption of the air, or generally, any matter capable of being absorbed, when exposed to the influence of this function.

A reference to those states of the constitution before detailed, which seemed to favour these accumulations of gas, will at once confirm or establish our belief in the truth of this theory. Thus, during the course of any disease, of which diarrhœa or hæmorrhage are symptoms, or in which they may have been produced by artificial means, or the occurrence of any circumstances which tend to diminish the quantity of blood, or prevent the necessary supply of chyle to this fluid, or any morbid impression by which the tension, elasticity, or *tone* of the blood-vessels as it is called, is impaired,—which is indisputably their state in

low fevers, cases which seem peculiarly prone to induce gaseous effusions,—such directly increase the quantity of air absorbed, and this being more in amount than can ordinarily be disposed of in the system, is retained in the blood,—the oxygen uniting with the carbon of the blood to form an equally increased proportion of carbonic acid, the nitrogen being (as absorbed) also increased,—until it meets with circumstances favourable to its exhalation; these are presented not only by the lungs, but also by the various mucous cavities, from the vessels ramifying on the delicate internal membrane of which it escapes, relieving the system from the great depression, or even danger of a fatal result which would follow the retention of gases so prejudicial to life, as nitrogen and carbonic acid.

The effusion of air which takes place in the stomach and intestines of those labouring under asthmatic affections, or diseases of impeded circulation, occurs by a somewhat different process, and requires a separate notice. By experiments of Müller and Magnus, it appears that venous blood is indebted for its heightened colour to an excess of carbonic acid, the oxygen of the inspired air and the carbon of the blood, by their union, producing this gas. It appears, too, that this conversion may take place even if the direct influence of the atmosphere be excluded; a fact exemplified in an experiment of the late Dr. Macartney, which consisted in enclosing in a glass tube, hermetically sealed, some freshly drawn arterial blood, which, although thus excluded from the immediate effect of the atmosphere, yet the colour became changed, from red to purple; in fact, the arterial became venous blood. This formation of carbonic acid does not appear to be instantaneous, but to require the lapse of some period for its completion—a fact, indeed, of daily observation. In cases where no impediment to the circulation of the blood exists, this change takes place in the capillary vessels; but where there is any impediment to the circulation, as in those diseases enumerated, or, which is synonymous, in consequence of the *delay* to the transit

of blood, this change of arterial to venous blood, or formation of carbonic acid, takes place *before* the arterial blood reaches the capillaries, giving rise to the blue colour of the lips, &c., so characteristic of this class of diseases. In consequence, however, of the state of the lungs in these diseases, their exhalant power is impaired ; and the blood, being surcharged with carbonic acid, the stomach and intestines seek, by a vicarious office, to relieve it of the superabundance of gas it contains ; thus giving rise to flatulence in all its forms.

Thus, I think, we have reason to conclude that the gases so frequently found in the stomach and bowels, or more rarely in the cellular tissue, are not the results of fermentation of the contents of the former, nor putrefaction of the vital constituents ; but that both are the results of states which diminish the natural fulness of the vascular system, or delay the transmission of the blood through the vessels.

AIR IN THE STOMACH A CAUSE OF INDIGESTION.

We have before seen, that in order to insure the perfect performance of the digestive process, it is necessary that the muscular contractions of the stomach should be effectual,—the vermicular to mix the gastric juice with the food, and to remove the chyme, when formed, from its surface ; and the tonic, or compressing action, to assist the former, and force the newly formed chyme through the pylorus, into the duodenum. But when air is present in the stomach, it becomes interposed between the alimentary mass and its inner surface ; the consequence of which is, that the muscular efforts of the organ act without effect ; the food, which may be of the most digestible materials, remains almost without motion, in the most dependant part of the stomach ; the chyme, instead of being forced through the pylorus, remains mingled with the half resolved food ; and that which in the normal state is a grateful and healthy stimulus, becomes a source of irritation, and the whole train of dyspeptic symptoms supervenes. For the same reasons, it is

that constipation so frequently accompanies this affection ; for by the presence of air in the intestines, the muscular contractions, by which alone their contents are impelled forward, cannot act with their necessary effect, and the retention of the fæces is the result.

In support of these opinions, I may add, that a common cause of an attack of indigestion is over-exercise while the stomach is empty, e. g. long walks before breakfast. For, after the lengthened fast of twelve hours, the vascular system is rendered, by any additional source of debility, in a state most favourable for the absorption of air, which in a short time is effused into the stomach. The morning repast is then taken, which, by the previous presence and continued effusion of air, is prevented from being properly digested, and an attack of indigestion follows. This may be prevented by taking coffee, and a biscuit, before undertaking the exercise ; the practice will then be unattended by any unpleasant result.

From the foregoing considerations, we are enabled to infer, that the best means of relieving the dyspeptic symptoms are by appropriate carminatives to expel the air ; or, which is more effectual, a mustard emetic, which at once gets rid of all offending matters. The careful avoidance of all those causes which have been observed to favour the production of intestinal gas, before enumerated ; a supply of nourishing food, and the occasional exhibition of those medicines which are known to improve the tone and strength of the vascular system generally, and produce a healthy plethora of the vessels, will be found to constitute the most successful line of treatment. I need scarcely observe, that all depletory measures, such as the exhibition of purgatives, are those best calculated to increase the malady, and should be carefully avoided.

In conclusion, I must disclaim against the suspicion, that I view flatulence as a *sole* cause of dyspepsia. This I have brought forward, not having observed it alluded to in the many valuable treatises on stomach disease with which our medical

literature abounds, and conceiving it to be the most tangible and most easily demonstrated source of the affection.

ART. XI.—*Should the Child be placed to the Mother's Breast almost immediately after Delivery, or should Twenty-four Hours, or more, be allowed to intervene, as is the usual Custom.* By EDWARD OCTAVIUS HOCKEN, M.D., M.R.C.S., Fellow of the Royal Medical and Chirurgical Society, &c.

THAT a satisfactory answer to these questions is of no slight importance to the well-being of the mother and her offspring, I shall endeavour to prove in the following pages. The generality of practitioners follow in such matters as these (which they esteem trifles) a routine practice, without bestowing much, if any, consideration on the subject. The truth, however, is that on these inquiries mainly depends whether the case of a delicate mother or an unhealthy infant shall be quite satisfactory, or replete with dangers and accidents. I will proceed to consider the subject under the headings of—first, the advantages of placing the child to the breast early; second, the disadvantages of not doing so; and thirdly, the reasons why, on the one hand advantages are obtained, and, on the other, the disadvantages are avoided.

1st. What are the advantages obtained by placing the child early to its mother's breast?

The benefits obtained by an early application of the infant to its mother's breast, accrue both to the mother herself, and her offspring. In the mother they refer especially to the state of the uterus and mamma, and in the child to the condition of its alimentary canal, and its capability of drawing the breast.

As regards the mother, one of the most desirable circumstances after the birth of the secundines, is an uniform, and firm contraction of the uterus, which by its permanency, may preclude all danger of subsequent hæmorrhage. A patient is

watched for some time anxiously after delivery lest danger of this kind should come on, for previous to the application of the child to its mother's breast, we are never sure but that the uterus may relax, and that alarming or dangerous hæmorrhage, either apparent externally, or accumulating internally, may accrue, and place the patient in immediate jeopardy. But such an occurrence never takes place when once the mother has given suck to her own child; no uneasiness need be entertained on this point if we have seen the child applied to the mamma before leaving the patient's house, for under these circumstances, the uterus is sure to maintain a firmly contracted condition. There are few things more consolatory to the conscientious mind, than a knowledge that danger has been warded off, or at all events the patient placed in security, by a judicious foresight; that by the adoption of simple measures, not only immediate and pressing hazard has been secured against, but also those consequences, which might have originated from it. This is the case in the instance before us, for if the uterus do not remain firmly contracted, even should no hæmorrhage occur, small clots accumulate in the uterus, and subsequently give rise to very painful contraction in order to dislodge them. We thus avoid by placing the child to the breast early, continued and severe after-pains, and what is in some cases of much greater importance, a profuse, continued, and sanguineous discharge of the lochia. Firm clots of blood will sometimes remain for some time, and undergo putrefactive changes in the uterus, and I think that there can be little doubt that absorption of putrefactive matters into veins, and the general circulation does occasionally happen from such causes. No one can doubt that such causes would prove adequate to occasion phlebitis or the worst forms of malignant fever, or that having such an origin, it should not be capable of secreting a morbid poison, capable itself of propagating the disease to others. Dr. Rigby* says, that he has long been con-

* Library of Medicine, vol. vi. pp. 266-7.

vinced that one of the causes of puerperal fever is the absorption of putrid matters furnished by the coagula and discharges which are apt to be retained in the uterus and passages after parturition. Again he maintains that in one species of uterine phlebitis, which occurred sporadically, and prevailed a good deal from 1829 to 1832, it was, in his opinion, evidently produced directly by the absorption of putrid matter into the uterine veins and lymphatics, exciting inflammation in those vessels. The same cause, when only carried to a certain extent, produces a local inflammation, which, when affecting the general circulation, is followed by fever. Dr. Rigby quotes also Dr. Kirkland, who wrote in 1774,* who says, that there are other causes beside inflammation which bring on a puerperal fever; for it sometimes happens that coagulated blood lodges in the uterus after delivery, and putrefying from access of air, forms a most active poison, is in part absorbed, and brings on a putrid fever. One grand advantage, therefore, of an early application of the child to the breast is the prevention of clots of blood, and other discharges, accumulating in the uterus, and there undergoing putrefactive processes; thus cutting off all risk of inflammation or fever from this source.

As placing the child to the breast early is the best preventive of uterine hæmorrhage, so also is it a most efficient means of suppressing it in some untoward cases, where this measure has been previously neglected. Even in those severe and alarming states, where restlessness and jactitation have already set in, where one fainting fit succeeds another, the skin is covered with a cold and profuse perspiration, and the breath feels cold and damp, placing the child to the mother's breast will never fail, provided the woman is capable of recognizing her offspring. The countenance brightens, a gush of blood and coagula show that the womb has expelled its contents, and by its firm contraction resists future hæmorrhage. The mere act of sucking the

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* Treatise on Childbed Fevers.

breast is not of itself sufficient; for these favourable results will not follow if another child be placed to the breast, or if the mother be incapable of recognizing her own offspring.

At the time of the child's birth the mother's nipples and breasts are beautifully adapted to facilitate the process of sucking, being conical, the nipple projecting considerably beyond the mamma, which is little, if at all, distended by its contents. If, however, the child be not placed at the breast for a day or two, it becomes considerably enlarged from the accumulated secretion of milk, the nipple becomes buried instead of projecting, and the child experiences the greatest difficulty in seizing it. In this process the nipple suffers considerable violence, and the thin delicate skin covering it is apt to crack, and form painful fissures, by the child's constant attempts, which are kept up and increased by the continued difficulty. The whole process is attended with very considerable suffering to the mother.

In some cases, where the breast has been allowed to become greatly distended before the application of the child, especially where the child refuses to suck, or the pain prevents the mother's enduring it, inflammation is set up in and around the gland; portions become hard, swelled, and very painful, fever succeeds, and the case may go on to the formation of mammary abscess.

On the contrary, if the child be early applied, the secretion of milk becomes favourably established; it does not accumulate in the milk ducts, inflammation is prevented, and excoriation of the nipples is extremely rare. The child should therefore be placed to the breast almost immediately after its birth, whether the breast does or does not contain milk.

Immediately the child is born, and sometimes even before this, it will instinctively suck any thing introduced into its mouth, and seek the nipple when placed to the breast. On all hands it is allowed that a gentle aperient is requisite to get rid of the accumulated meconium; but why have recourse to substances which will disagree with the *primæ viæ*, when Nature has provided a most beautiful and simple aperient medicine in

the colostrum, or the first formed serous milk? The child is born hungry, and instinctively desirous of the nipple, but instead of gratifying its natural taste, a quantity of artificial and, to it, indigestible food, and irritating medicines, are thrust down its throat. The natural consequences of this folly succeed; abdominal irritation is set up, which it is extremely difficult to overcome entirely, and which lays the foundation of future susceptibility and disease; or even convulsions may succeed, and prove quickly fatal. Again, when the child is eventually placed to the breast, it is no longer hungry, the nipple is seized with difficulty, and it either refuses entirely, or great difficulty is experienced in making it take the breast. People will express surprize that panada, gruel, castor oil, or butter and sugar should disagree with an infant, who would feel little wonder at severe indigestion resulting in the adult from raw vegetables, as cucumber, &c.; yet in fact artificial food and medicines are much more irritating to the delicate gastro-enteric surface of the new-born infant, than crude vegetables to the intestinal tract of the adult.

The advantages of placing the child early to its mother's breast are then, in reference to the infant, that its instinctive efforts are gratified,—that the child takes the breast without trouble,—that a bland and nutritious fluid, acting as a gentle and desirable aperient, is substituted for articles which irritate and disagree, and that being supplied with its natural and appropriate food (the only food at all adapted for the nutrition of a new-born infant), the whole train of troublesome or dangerous symptoms, springing from gastro-enteric disturbance, is entirely prevented.

What are the disadvantages of not applying the child to the breast early?

In recounting the advantages which result from an early application of the child to its mother's breast, it has been almost impossible to avoid the enumeration also of the disadvantages of not doing so; but to impress these matters more strongly on the

minds of my readers, it will not be without advantage to give a *resumé* of these particulars themselves.

In the first place, the uterus is apt to remain in an imperfectly contracted condition, and even to relax completely; hence the great danger of external or internal hæmorrhage. Even if the relaxation be not sufficient to occasion hæmorrhage, small clots are apt to remain in the uterus, and in the orifices of the uterine sinuses, and subsequently occasion much pain to the patient, and in some cases even much alarm, when they are brought off some days afterwards by the uterine contractions. The mere remora of blood and discharges is not free from the most serious danger, since they may undergo putrefactive changes, and be taken up into the veins and absorbents, occasioning uterine phlebitis, &c., or even poison the general circulation, and originate the worst type of puerperal fever, ready to spread its most destructive influence to others similarly situated, through the medium of the practitioner. Again, the lochia are apt to be very profuse and sanguineous, and prove troublesome and debilitating to relaxed patients.

The next set of untoward symptoms which arise from delaying the application of the child to the breast for some days, happens to the breast of the mother. It becomes painfully distended, and the nipple retracted, so that the child finds difficulty in seizing it, and drawing the breast. As this is repeated several times, the thin and delicate skin covering the nipple is frequently excoriated, and apt to suffer rupture, degenerating into painful fissures. Every time the child is now put to the breast the mother suffers much agony,—so much so, in some cases, that she can no longer continue to suckle her infant in the usual way, but requires the use of a shield and artificial nipple; and, on this account, gives artificial food, when otherwise the appropriate diet would have been employed solely, to the great distress and injury of the child. In other more severe cases the breast inflames, and may go on to suppuration, when the mother is exposed to all the suffering, distress, and danger

of active fever, followed by hectic, and on recovery the mamma is rendered useless during that period of lactation.

When the child is placed at the breast after an improper delay, artificial food and medicine have been administered in the interval, it is no longer hungry, the nipple cannot be got at, nor the breast drawn with facility, and in consequence there is great difficulty in making it suck, or for the time it refuses altogether. But improper food and medicines are almost sure to originate griping, flatulence, green stools, diarrhœa, and vomiting; the nervous system becomes unduly susceptible; the child becomes cross and fretful, and frequently suffers in this way during its whole childhood, even if struma and serous disease do not come on: hence if any further source of irritation be added, as during dentition, the child is very likely to be carried off by convulsions.

In what mode does the early application of the child to the breast operate?

A most beautiful and curious sympathy exists between the healthy stimulation of the breast by the infant and the uterus. The application of the child produces firm and permanent contraction of the uterus, which is even sufficient to restrain the most appalling cases of hæmorrhage, after the birth of the secunderies, where the mother can see and recognize her own infant. It is by this healthy stimulation of the breast, which not only operates so beneficially on the state of the uterus, answering a favourable course, and preventing many accidents and dangers, by inducing its healthy and permanent contraction, but by its action on the nipple and gland preventing distention, and setting up the secretion of milk most favourably as regards time and manner. We obtain all these benefits, and avoid all these dangers, not by any painful or unusual proceeding, but by simply attending to and following the plain and evident directions of Nature, which has implanted an instinctive desire for the breast in the infant as soon as it is born, and has provided

suitable nutrition and medicine for it in the very process of gratifying those instinctive impulses.

The conclusion, to which every candid mind must arrive by considering these facts, is, that the child should always be placed to the mother's breast before the practitioner quits his patient's house, and that no artificial food or medicine should in any instance be administered.

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BIBLIOGRAPHIC NOTICES.

The Physiological Anatomy and Physiology of Man. By Robert Bentley Todd, M.D., F.R.S., Fellow of the Royal College of Physicians, Physician to King's College Hospital, and Professor of Physiology in King's College, London; and William Bowman, F.R.S., Assistant Surgeon to King's College Hospital, and Demonstrator of Anatomy in King's College, London.

Of late years, physiology and physiological anatomy have received numerous and most important additions, chiefly the results of a more extended knowledge of comparative anatomy, and the application of the microscope. To any one interested in the progress of the medical sciences, it must be extremely gratifying to observe how rapidly physiology has lately advanced, and how successfully it has been cultivated, both on the Continent and in Britain; in fact, every month now brings to light new facts, and reveals views respecting the functions of the organs, and the nature of their tissues, which frequently supersede those previously entertained; and hence it happens, that it is now no easy task to keep pace with the advancement of physiology; an advancement so steady and so rapid, that the physiological systems of Bostock, Richerand, and even Magendie, have already become obsolete. Müller has, it is true, lately published a work, unrivalled since the days of Haller, and which may be said to have left no subject untouched and unimproved; but Müller's work contains too much original matter, to allow its author to compress each subject within limits proportioned to its importance; and often contains (as is always the case with original authors) more of disquisition than is consistent with a work where no attempt is made, but to render the reader acquainted with the actual state of the science for the time being. Now, in this consists the peculiar excellency of the book we owe to the joint labour of Dr. Todd and Mr. Bowman, who

have accomplished the truly formidable undertaking of collating all facts and opinions worthy of note, and judiciously recording the actual state of our knowledge upon each particular subject. We have called such an undertaking formidable advisedly; for, even in the best cultivated fields of human science, the tares spring up more abundantly than the corn, and consequently, he who reaps and binds, must reject far more than he retains.

The Authors' views in publishing may be best gathered from their own words:

"The work, of which the first part now appears, is intended as a plain and accurate view of the intimate structure and functions of the human body, for the use of the student and practitioner in medicine and surgery. The scheme of it corresponds with that adopted in the physiological lectures at King's College, London; but all the subjects have been wrought out anew by the Authors conjointly, and the work is the product of their united labours.

"The Authors have endeavoured on almost every occasion to make their descriptions direct transcripts from nature; and they have, for the most part, contented themselves with a concise statement of approved facts and opinions, passing over those historical details which too often prove cumbrous and distracting appendages to physiological works.

"The Authors desire to express their obligation to Mr. Vasey, the able and intelligent artist by whom the wood-engravings have been executed.

"The work will be completed in two more parts, which are already in an advanced state, and which will appear in the course of the ensuing twelve months, as early as may be consistent with a careful revision of the subjects they are intended to embrace. The preface and a copious index will accompany the last part."—*Advertisement.*

As the illustrations are numerous, it is very difficult to select any section of the work which can, in fairness to the authors, be perused without the advantage of the accompanying wood-engravings. We give the following from the chapter on Molecular Motion, as least liable to that disadvantage, though even here much of the point of some passages is lost from want of the woodcuts.

"*Organic molecular motion* occurs in nearly all the internal processes. The introduction of new matter from without into the blood; the removal of effete particles by a process of absorption; the transfer of nutrient matter from the blood to supply the place of the particles thus removed; the separation of organic compounds in glands, cannot take place without a movement of molecules in the textures concerned in these processes. We are as much at liberty to infer, that these motions are produced by certain affinities of the particles of the tissues, as that chemical action is the result of affinities between

certain forms of matter. These motions of the organic and inorganic elements are incessant during the ceaseless round of organizing and disorganizing actions of which every tissue is the seat, as long as it continues living. The currents alluded to in the preceding paragraph are visible indications of the presence of these organic movements.

"3. The molecular movements of nerve and muscle under stimulation have been already mentioned in the preceding chapter. The capacity of exhibiting these movements exists only while the nutritive process continues to be carried on in the respective tissues—it ceases with life. It would appear that the precise chemical constitution, which is essential to its existence, is of so unstable a nature, as to be constantly prone to change, and to require incessant renewal; or, it may be, that this capacity is one which is only developed during the active operation of certain chemical forces, as if it depended necessarily on certain peculiarities of the organic elements when in a nascent or changing state.

"In *muscular movement* there is a visible approximation of the ultimate particles of the tissue in a determinate direction, as will be further explained in the proper place; and in this consists the whole value of muscular tissue as a part of the mechanism of the body. All those motions in the living body which are visible to the naked eye, and many of those which cannot be seen without the aid of lenses, are effected by muscular action. By it canals or tubes adapt themselves to their contents; the heart propels the vital fluid; the digestive canal transmits the ingesta from one part to another; the excretory reservoirs, or ducts, expel their contents; and lastly, by it the attitudes are maintained, and the locomotive function is performed.

"*Ciliary motion.*—In the same category with the molecular motions of the living body we would place that singular phenomenon, now well ascertained by multiplied observations, which is called *Ciliary motion.*

"Certain surfaces, which are, in their natural and healthy state, lubricated by fluid, are covered with a multitude of hair-like processes, of extreme delicacy of structure and minuteness of size. These are called *cilia*, from *cilium*, an eye-lash. They are generally conical in shape, being attached by their bases to the epithelium that covers the surface on which they play, and tapering gradually to a point; or, as Purkinje and Valentin state, they are more or less flattened processes, of which the free extremities are rounded; and this latter form prevails in the human subject. They vary in length from the $\frac{1}{1000}$ to the $\frac{1}{12000}$ of an inch. They are disposed in rows, and are adapted in their arrangement to the shape and extent of the surface to which they belong; they adhere to the edges, or to a portion of the surface of the particles of the epithelium, preferring the columnar variety of them.

"During life, and for a certain period after death, these filaments exhibit a remarkable movement, of a fanning or a lashing kind, so that each cilium bends rapidly in one direction, and returns again to the quiescent state. The motion, when viewed under a high magnifying power, is singularly beautiful, presenting an appearance some-

what resembling that of a field of corn agitated by a steady breeze. Any minute objects coming in contact with the free extremities of the cilia are hurried rapidly along in the direction of the predominant movement; one or more blood-discs, accidentally present, will sometimes pass rapidly across the field, propelled in this way, and very minute particles of powdered charcoal may be conveniently used to exhibit this phenomenon, and to indicate the direction of the movement. The action of the cilia produces a current in the surrounding fluid, the direction of which is shown by the course which the propelled particles take.

"An easy way to observe this phenomenon is to detach, by scraping with a knife, a few scales of epithelium from the back of the throat of a living frog. These, moistened with water or serum, will continue to exhibit the movement of their adherent cilia for a very considerable time, provided the piece be kept duly moistened. On one occasion we observed a piece prepared in this way exhibit motion for seventeen hours; and it would probably have continued doing so for a longer time, had not the moisture around it evaporated. However, Purkinje and Valentin have observed it to last for a much longer time than this in connexion with the body of the animal. In the turtle, after death by decapitation, they found it lasted, in the mouth, nine days; in the trachea and lungs, thirteen days; and, in the œsophagus, nineteen days. In frogs, from which the brain had been removed, it lasted from four to five days. The longest time they observed it to continue in man and mammalia was two days; but in general it did not last nearly so long. What appears to be immediately necessary to the continuation of the movement, is the integrity of the epithelial cells to which the cilia adhere; for as soon as these shrink up for want of moisture, or become physically altered by chemical reagents or by the progress of putrefaction, the cilia immediately cease to play.

"From these facts we learn two important points in connexion with this phenomenon. The first is, the truly molecular character of the movement. Whatever be the immediate cause of the action of the cilia, it is evidently intimately connected with the minute epithelial particles to which they are attached; for cilia never exist in man and the higher animals without epithelial particles, and these particles have no organic connexion with the subjacent textures, excepting such as may arise from simple adhesion. And, secondly, we perceive, that this movement is independent of both the vascular and the nervous systems, for it will continue to manifest itself for many hours in a single particle isolated from the rest of the system. After death it remains longer than the contractility of muscle; a circumstance which, together with the facts just mentioned, indicates that the cilia cannot be moved by little muscles inserted into their bases, as some have supposed. And experiment also shows this independence. If the abdominal aorta be tied, the muscles of the lower extremities will be paralyzed in consequence of their being deprived of their blood;

and on removing the ligature, and allowing the blood to flow, the muscles will recover themselves. But a ciliated surface is not affected at all in its movements, though the supply of blood to the subjacent tissues be completely cut off. Again, hydrocyanic acid, opium, strychnine, belladonna, substances which exert a powerful effect on the nervous system, produce no influence upon ciliary motion: in the bodies of animals killed by these poisons, the phenomenon is still conspicuous; and even the local application of them does not hinder it, provided the solutions do not injure the epithelial texture. Shocks of electricity passed through the ciliated parts, do not affect the movement. Lastly, the removal of the brain and spinal cord in frogs, by which all muscular movements are destroyed, does not stop the action of the cilia. This striking fact may likewise be adduced to disprove the supposition, that these movements result from the action of minute muscles; for, although muscles may be excited to contract without nerves, we have no instances in the higher animals in which they habitually act without the interference of the nervous system; nor is it likely that a movement existing over so extended a surface, as that by the cilia, would, if effected by muscles, be independent of nervous influence.

"Alterations of temperature affect the ciliary motion, owing, doubtless, to the physical change they induce in the epithelial particles. In warm-blooded animals it ceases on a reduction of the temperature below 43° F. In cold-blooded animals, however, it continues even at 32°. In all, a very high temperature effectually puts a stop to it. It is interesting to notice, that all observers agree in stating, that blood is the best preservative of the ciliary motion, but the blood of vertebrata destroys it in the invertebrata. Bile puts a stop to it, ery probably by reason of its thick and viscid nature, and not from any chemical influence.

"This phenomenon exists most extensively in the animal kingdom. It has been found in all the vertebrate classes; and in the invertebrata likewise, with the exception of the crustacea, arachnida, and insects. It is the agent by which the remarkable rotation of the embryo in the ova of mollusca is effected; and it occurs on the surface of the ova of polypes and sponges. The bodies of some of the infusoria are covered with cilia, which are apparently employed by them as organs of locomotion, and for the prehension of food.

"In man, the ciliary motion has been ascertained to exist on several surfaces:—1. On the surface of the ventricles of the brain and on the choroid plexuses. So delicate are the cells of epithelium here, that the slightest mechanical injury destroys them: it is, therefore, very difficult to see the movement. Valentin states that its duration is considerable in these parts, so that it may be seen in subjects used for dissection. 2. On the mucous membrane of the nasal cavities, extending along the roof of the pharynx to its posterior wall, on a level with the atlas, on the upper and posterior part of the soft palate, and in the immediate neighbourhood of the Eustachian tube,

extending through the tube itself to the cavity of the tympanum. 3. On the membrane lining the sinuses of the frontal bone, the sphenoid, and the superior maxillary. 4. On the inner surface of the lacrymal sac and lacrymal canal. 5. On the membrane of the larynx, trachea, and bronchial tubes. 6. On the lining membrane of the female organs of generation. It does not exist in the vagina; but it may be traced from the lips of the os uteri, through its cavity, and through the Fallopian tubes to their fimbriated margins.

"In nearly all these instances there appears to be a mechanical use for the ciliary movement, namely, to promote the expulsion of the fluid secreted by the surfaces on which the cilia exist. Wherever the direction of the motion has been ascertained, it is that which would be favourable to such a purpose. In the bronchial tubes and trachea, the direction of the motion is towards the larynx, so that the cilia may be regarded as agents of expectoration. In the nose of the rabbit, Dr. Sharpey observed the impulse to be directed forwards, and in the maxillary sinus it appeared to pass towards the back part of the cavity, where its opening is situated. In the Fallopian tube, the direction is stated by Purkinje and Valentin to be from the fimbriated extremity towards the vagina. It seems very probable that ciliary motion exists in the kidney, at the narrow neck of each uriniferous tube, as it passes off from the capsule of the Malphigian body. This has not been actually observed in the human subject. It was discovered, and has been frequently seen in the frog. The movement is here directed towards the uriniferous tube, and it doubtless is destined to favour the flow of the aqueous portion of the secretion from the capsule to the tube.

"In the inferior animals the cilia seem to answer a similar end to that in man. They exist extensively on the respiratory surfaces, and in connexion with the generative organs; and also, but to a less degree, with the organs of digestion. But in some situations, both in man and in the inferior creatures, it is difficult to determine what functions the ciliary motion can perform. Such are, in man, the ventricles of the brain; and, in the frog, the closed cavities of the pericardium and peritoneum. Here there are no excretory orifices, toward which the current might set.

"What is the cause of ciliary motion? We have shown it to be independent of the blood and of the nerves, and to resist those depressing causes which usually put a stop to the action of contractile tissue. It requires for its continuance three conditions: a perfect epithelium cell; moisture, not of too great density; and a temperature within certain limits. From Schwann's observations it appears that cells exhibit a power of endosmose; that a chemical change occurs in the fluids in contact with them; and that a movement of their internal granules may be seen under certain circumstances. If ciliated epithelium cells exert an attraction of endosmose upon the surrounding fluid, may not this physical phenomenon afford a clue to determine the cause of the movement?

"A very remarkable movement is manifested by certain particles found in the secretion of the testicle, which prevails most extensively throughout the animal series, and is even found among plants. From the regularity of these movements and their resemblance to those of minute animals, a place had been assigned by naturalists to the particles in question, in their zoological classifications, under the name '*Cercariæ seminis*,' Spermatozoa, or Spermatic animalcules, and Ehrenberg refers them to the Haustellate Entozoa. These particles consist chiefly of a long filament or tail, which is sometimes swollen at one extremity, to form the body of the supposed animalcule. The motions consist in a sculling action of the tail, or a slight lateral vibration of it. In many of its conditions it closely resembles ciliary motion; and its duration after death, or after the separation of the fluid, is pretty much the same as that of the ciliary movements. The particles are extremely minute, even measured in their length; but especially so in thickness. They are, therefore, well adapted to obey those impulses which we have shown to be capable of giving rise to molecular motions. We shall return to this curious subject again in discussing the function of generation."

Our readers will be better enabled to form a just idea of the great value of the work by perusing the chapter of contents, which we subjoin, and a list of the illustrations. In the seven chapters the subjects treated are both numerous and important, and yet so admirable is the arrangement, and so condensed and clear the style, that every thing is explained within the short compass of 200 pages.

"Introduction.—Introductory observations. Organized and unorganized bodies, their respective characters. Life. Animals and plants. The Mind. Importance of physiology to medicine. Mode of conducting physiological inquiries.

"Chapter I.—Solid and fluid constituents of animal bodies. List of proximate principles and secondary organic compounds. Albumen. Fibrine. Caseine. Proteine. Vegetable fibrine, albumen, and caseine. Gelatine. Chondrine. Secondary organic compounds. Classification of the tissues. Of the development of the tissues from cells. Properties of the tissues.

"Chapter II.—Of the minute movements occurring in the interior of the body. Brown's molecular motion. Organic molecular motion. Molecular movements of nerve and muscle. Ciliary motion. Motions of Spermatozoa.

"Chapter III.—Passive and Active Organs of Locomotion.—White fibrous tissue. Yellow fibrous tissue. Areolar tissue. Adipose tissue and fat.

"Chapter IV.—Cartilage. Fibro-cartilage.

"Chapter V.—External and internal skeletons. Animal and earthy constituents of bone. Forms of osseous tissue. Periosteum

and medullary membrane. Forms of bones. Vessels of bone. Ultimate osseous tissue, Mr. Tomes' observations. Internal arrangement of bone. Development of bone. Process of ossification. Growth and reparation of bone.

"CHAPTER VI.—Synovial membrane. Serous membrane. Their intimate structure,. The joints. Mechanism of the skeleton.

"CHAPTER VII.—Of striped muscle. Intimate structure. Development. Of unstriped muscle. Of their distribution in the body;—in the animal scale. The blood vessels and nerves of muscles. Properties of muscle. The muscular sound. Contraction and contractility. The attitudes of man. Reflex, instinctive, and other movements of the voluntary muscles."

"1. Primary organic cell (Authors). 2. Examples of cilia—*a*. Portion of a bar of the gill of the Sea-mussel:—from Dr. Sharpey's art. Cilia, in Cycl. Anat. and Phys. *g*. Leucophrys patula:—after Ehrenberg. The rest from the art. Mucous Membrane in Cycl. Anat. 3. Cilia of the uriniferous tube (Phil. Trans. 1842). 4. White fibrous tissue (Authors). 5. Yellow fibrous tissue (Authors). 6. The two elements of the areolar tissue (Authors). Development of the areolar tissue (after Schwann). 8. Meshes of the areolar tissue, when dried (Authors). 9. Polyhedral form of fat vesicles (Authors). 10. Blood-vessels of fat (Authors). 11. Margarine and elaine of human fat, separated within the vesicle (Authors). 12. Development of the adipose tissue (after Schwann). 13. Cartilage-cells from the chorda dorsalis of the Lamprey (Authors). 14. Section of the articular cartilage from the head of the humerus (Authors). 15. Section of the cartilage of the ribs (Authors). 16. Section of the thyroid cartilage (Authors). 17. Elementary structure from an intervertebral disc (Authors). 18. Vertical section of the upper end of the femur (after Bourgery). 19. Longitudinal section of bone (Authors). 20. Venous canals in diploë of the cranium (Authors). 21. Ultimate granules of bone (from a preparation of Mr. Tomes). 22. Lacunæ and pores of osseous tissue (from a preparation of Mr. Tomes). 23. Transverse section of bone surrounding an Haversian canal (from a preparation of Mr. Tomes). 24. Forms of the lacunæ and pores of osseous tissue (from Mr. Tomes). 25. Systems of lamellæ in the compact tissue of a long bone (Authors). 26. Radiation from the Haversian canals (from Mr. Tomes). 27. Haversian system of lamellæ (from Mr. Tomes). 28. Vertical section of the knee-joint of an infant (Authors). 29. Scapula of a fœtus, exhibiting the progress of ossification (Authors). 30. Vertical section of cartilage, near the ossifying surface (Author). 31. Horizontal section near the ossifying surface (from Mr. Tomes). 32. Vertical section of newly formed bone, showing the second stage of ossification (Authors). 33. Another section (Authors). 34. Epithelium of serous membrane (Authors). 35. Yellow fibrous element of the areolar tissue of serous membrane (Authors). 36. Transverse sections of injected striped muscles from the frog, and from the dog (Cycl. Anat. art. Muscle). 37. Fragments

of elementary fibres, showing a cleavage into discs and fibrillæ (altered from Cycl. Anat. art.Muscle). 38. Transverse section of striped muscle, showing the sarcous elements (from the Phil. Trans. 1840). 39. Lateral union of the sarcous elements (from the Phil. Trans. 1840). 40. Sarcolemma stretching between two fragments of a striped fibre (from the Phil. Trans. 1840). 41. Hernial protrusion of the sarcous tissue through the sarcolemma (from the Phil. Trans. 1840). 42. Attachment of tendon to muscle (from the Phil. Trans.) 43. Ditto, ditto. 44. Stages of the development of striped muscle, partly from Schwann (*a.* Schwann; *b. f.* Authors; the rest from Phil. Trans. 1840). 45. Development of striped fibre in the insect (Phil. Trans. 1840). 46. Fibres of unstriped muscles and their cytoblasts (Cycl. Anat. art. Muscle). 47. Capillaries of muscle (Authors). 48. Termination of the nerves in muscle after Burdach. 49. Contraction of striped muscle (from the Phil. Trans. 1840). 50. Ditto, ditto. 51. Ditto, ditto."

Essai d'Hématologie Pathologique. Par G. Andral, 8vo., pp. 184. Paris, 1843.

Essay on Pathological Hematology.

There is nothing more certain than the uncertainty of possession which medical doctrines hold over the professional public. Humoralism had a long day, but being pushed too far, a gradual reaction took place in favour of solidism; this became too exclusive, for which the pathologists were blamed, when lo! one of the most eminent of those pathologists comes forward to reinstate the old dynasty of the humoral doctrine, in its former state, or rather to a share of the dominion with solidism.

This work of M. Andral's, on the Changes which the Blood undergoes in Disease, must exercise a vast influence on medicine; though small, it is the product of numerous experiments and great labour, and will add to the already high reputation of the author. Like all his other works, it is remarkable for clearness, the good sense of the views; and it everywhere bears the stamp of care and accuracy.

M. Andral observes:

"Reasoning as to the changes which the blood undergoes in disease, or on the alterations its being so changed causes on the solids, could lead to little good. It must be pure hypothesis. By this process, could the difference between the blood in chlorosis and in scurvy be detected? What has been actually said of the state of the blood in these diseases, except that it was impoverished, and that on the impoverished state of the blood, depended the symptoms. But how

is it that they are so different? The fact is, that in these two diseases, the impoverishment of the blood is not the same; in each it is a different element of the blood which is faulty, and thus analysis leads us to learn, that chlorosis and scurvy are not diseases of the same nature, and thus the great difference in their symptoms becomes manifest."

The idea that diseases depend on an alteration in the primary elements of the body, is very ancient, and descended from Thales to Galen, and from Galen to the chemists of the sixteenth century. They depended too much on hypothetical reasoning, and believed the changes effected in their crucibles to take place in the living body. However, we owe many important facts to them, particularly to Sylvius Delaboë, who published, among many extravagant theories and notions, some facts which modern experience has confirmed. The chemical theories of the changes in the body were not implicitly received, but met with some decided opponents; among these was Sydenham, who declared that chemistry should be employed on pharmaceutical preparations alone, and for a long time the intervention of chemistry was rejected. Haller, however, again revived the use of chemistry as necessary to the progress of the medical sciences, and, with his usual judgment, assigned it certain limits. But it was by the genius of Lavoisier, that medicine received the greatest benefit from chemical science. A few years after the enunciation of the pneumatic chemistry, two chemists, Parmentier and Deyeux, associated to discover by experiment, up to what point in diseases the normal principles of the blood are not susceptible of change; and what are the changes in the blood in inflammatory diseases, putrid fevers, and in scurvy. This work reposed on too few facts, and, therefore, was little noticed. On the other hand, the spirit of the physical sciences sprung up, and some began to combat the ancient *humorism*, and finally, to endeavour to destroy it; and the point was soon reached, at which it was denied, that the blood could, by its changes, play any part in the production of diseases. The consequence was, that every experimental inquiry into the changes in the blood was laid aside and neglected. In vain did Bichat write: "Humoral medicine has no doubt been exaggerated, but it has true foundations, and in numerous cases it cannot be denied, that every thing ought to be referred to a vicious state of the humours." With the study of the blood by the microscope, it was pretty much the same as with its study by chemistry. Shortly after the discovery of Leeuwenhoeck, it was naturally sought, what the globules of the blood became in disease, but instead of trusting to direct observation, recourse was again had

to hypotheses. Such was Boerhaave's theory of the "error loci."

"Another author, Huxham, supposed, that in fever, these globules were altered by a too rapid motion; he supposed, moreover, that in diseases called putrid, these bodies, deprived of their consistence, were torn and broken in pieces, which easily introduced themselves in the smallest vascular ramifications, arrived at the open mouths of the exhalants, and were thrown out. Thus Huxham explained the hæmorrhages in putrid fever. Had this author then seen in the field of the microscope, the globules thus broken and reduced to fragments?"

By no means, but he admitted, by pure intuition of his mind, that it ought to be so, and he did not trouble himself to give the least experimental proof of so grave an assertion. Such vain and unfounded theories brought discredit on the means of investigation, and unhappily as they were rejected and neglected themselves, many interesting facts were passed over with them. The microscope was thrown aside, only to be taken up again lately. Thus the notion of discovering the origin of diseases in a change of proportion or of nature in the elements of organized bodies, has been by terms abandoned and renewed.

"In order that the chemical and microscopical analysis applied to the study of the blood in diseases, can give truly useful results, one condition is indispensable; which is, that an exact knowledge of the physiological state of the blood should be first acquired. In default of a sufficient study of all those diversities of aspect and of composition, that the blood may present without the health ceasing to exist, continual errors may be committed, as I shall endeavour to show by some examples.

"And first, conclusions must not be drawn from the composition of the blood of one animal to the composition of the blood of one of another kind. I have indicated in the memoir that I have published on this subject with MM. Garverret and Delafond, the very remarkable differences which exist in this respect between different kinds of animals. We have proved, in this work, that there are species whose blood contains normally more than double in fibrine what the blood of other kinds contain, and that these differences are also found in the globules. At what false results would we not arrive if, in sick animals, we took for starting-post the physiological quantities of the globules and fibrine of man to calculate the changes of composition that the blood has undergone in animals by illness.

"The appearance of normal blood is not the same among the different species of animals; and an appearance which in man is the constant expression of disease, belongs among other beings to their physiological condition; this is what takes place with respect to the buffy state of the blood. In man, whenever a true buffy coat occupies

the upper surface of the clot, the existence of a disease may be certainly affirmed; and whatever may be said, this buff never shows itself in the blood of the healthy man. Well, this is not the same among other animals, for whom this assertion would not be tenable. In the horse, for instance, the upper part of the clot will always be seen to be occupied by a white mass, which perfectly resembles the buffy coat of the blood in man."

In different individuals of the same species in a state of health the different ingredients of the blood may present different proportions within a certain range above and below the mean. The mean of the fibrine in the blood of man is $\frac{3}{1000}$; of the globules $\frac{127}{1000}$; the solid materials of the serum, of which nearly the whole is formed of albumen, present a mean of 80. Besides constitutional peculiarities which influence the relative proportions of the ingredients of the blood, other circumstances, independent of disease, have the same effect; for instance, emissions of blood and privation of nourishment, which both diminish the proportion of the globules, while the fibrine is less rapidly and less necessarily influenced. It is especially important, therefore, before proceeding to consider the pathological states of the blood, to know these facts beforehand.

"It is for want (on the part of investigators) of having directed themselves to this preliminary examination of the physical condition, that so many erroneous assertions have been emitted on the change that the state of disease can produce in the globules. I do not fear to affirm, that up to the present no alteration in these little bodies of form or texture which can be considered as the result of the influence of disease has been certainly obtained, and that all their modifications of aspect which have been described, and others which have been less marked, result, some from the successive destruction which they undergo according as they are abstracted for a longer or shorter time from the influence of life, and others from some circumstances quite peculiar which act on them, but which are not circumstances of disease. These circumstances have not been, according to me, always well appreciated: that granulated or raspberry-like appearance which is found in them so often, has been regarded, for instance, as an indication of the destruction of the globules, whether in the blood of dead bodies, or sometimes in the fresh blood examined shortly after it has been taken from the vessel. The researches which I have undertaken in this respect do not permit me to accept this manner of viewing it. The globules which take on this granulated aspect are not globules changed by disease, nor globules which are at one of the phases of their time of destruction. . When a drop of blood is placed in the field of a microscope, between two plates of glass, at the instant it escapes from the vessels, by the sides of the globules, properly so called, corpuscules are readily seen, rounded, white, of $\frac{1}{300}$ of a

millimetre in diameter, the existence of which has been affirmed by all observers. The red globules at first perfectly regular with their contour neatly finished, are not long in changing their exterior shape. Some present on their surfaces two or three little protuberances, and are said to be raspberry like; others resemble true cog wheels (*veritables roues d'engrenage*), appear regularly festooned and cut on their edges. As long as the dessiccation of the spot of blood is not accomplished, the number of the red globules, so deformed, augments in proportion as the time at which the experiment was commenced becomes more distant. As for the white corpuscules, they become so much the more rare as the preceding alteration itself makes more progress, and becomes more generalized. The rapidity with which these kinds of little teats or prominences which roughen the red globules appear, and that important circumstance that their exterior aspect and their dimensions are absolutely the same as those of the white corpuscules, every thing led me to think that this deterioration of the globules was due to a simple adhesion of the white corpuscules which surrounded them. In attentively following all the movements of displacement which pass in the field of the microscope, I have been able to assist at the production of the phenomenon, to see the white corpuscules approach the red globules, deposit themselves on their surface, adhere to their edges, and thus form every possible variety of raspberry like and festooned globules. This mamelonated aspect, which some consider as an indication of the beginning of destruction, and others as the results of a pathological influence, is only by final analysis the precipitation of the white corpuscules round the red globules.

"But what is the nature of these white corpuscules? Here a general fact presents itself: every time that blood is examined such as it proceeds from the vessels, the existence of white isolated corpuscules is ascertained, and then the raspberry like and festooned appearance of a certain number of red globules. When, on the contrary, by any means, the blood is deprived of all its fibrine before its spontaneous coagulation, no more white corpuscules are perceived in the field of the microscope, and the red globules no longer present the raspberry like aspect nor the festooned appearance. When they are left for a long time to themselves these globules, thus separated from the fibrine, diminish gradually in volume, reduce themselves to a kind of central nucleus, and finish by disappearing completely, but their surface or edges are never roughened with little prominences. The fibrine can moreover be studied by the microscope before it has spontaneously concreted into a thick and resisting membrane, in that semi-transparent and oily like layer known under the name of liquid buff, which shows itself above the blood of a bleeding constantly and normally in the horse, and only well ascertained in pathological circumstances in man. This liquid buff, as is known, is nothing else but serum holding in suspension an enormous quantity of fibrine, and this last principle presents itself under the form of white corpuscules of the same exterior aspect, and of the same dimensions as those of

blood not defibrinated. In order to study the fibrine yet more easily before its perfect coagulation, we have only to mix the blood at the moment of exit from the vein with one-seventh of its volume of a saturated solution of sulphate of soda. The mixture separates in two parts: one inferior, constituted by globules perfectly untouched; the other superior, formed by an opalescent liquid, where the whole of the fibrine is held in suspension under the form of white corpuscules of $\frac{1}{300}$ of a millimeter in diameter, as in the liquid buff. The solidification of the fibrine is slowly effected, and it is very easy to follow the different phases that it passes through in passing from the liquid to the solid state. If we take a drop of defibrinated blood, and where, in consequence, the perfectly pure globules can no longer undergo the alteration known under the name of raspberry like or festooned appearance, and the fibrine in corpuscules prepared with the sulphate of soda, or taken directly in the liquid buff, we see all the phenomena reproduced of which I have spoken in the instance of the blood not previously deprived of its spontaneously coagulated elements.

"This being granted, it is easy to understand what passes when a drop of blood is placed on a plate of glass, and when we blow strongly over it, so as to spread it out in an extremely thin layer. If the operation is well done and with rapidity, the globules remain perfectly pure, their surface is uniform, their edges neat and well defined, and, left to themselves, they never become raspberry-like or festooned. In such a case, the evaporation of the serum is nearly instantaneous; the solidification of the blood is, so to speak, sudden, and the fibrine has no longer time, as in the case where the blood is placed between two plates of glass, to go under the form of white corpuscules to oscillate round the red globules, and to deposit themselves on their surface or on their edges. Let it not be objected that the raspberry-like appearance, which the globules enclosed between two plates of glass take, depends on their having been altered by the pressure, for if a drop of blood well defibrinated be placed between two glasses, we never see the globules surrounded by granulations. From this mass of facts, I think I am able to conclude that the raspberry-like and festooned appearance of the globules is not the result of an alteration which these bodies have undergone, but that it depends on the precipitation around them of the molecules of the fibrine suspended in the serum. And if, moreover, I have been diffuse on such a subject, it is to show by this example, selected among many others, how very necessary it is to seek minutely for any circumstance which can deprive the globules of their normal aspect, before considering these changes as the product of a pathological influence. What can be more varied than all the changes of form that the globules can take by their agglomeration, without the possibility of any man accusing disease of having given them birth? When a sufficient study shall have been made of all the influences which, independent of disease, can impress on the blood changes in its physical properties, in its chemical composition, in its microscopical constitution, it will be pos-

sible to investigate the alterations that the blood may undergo under the influence of disease."

M. Andral divides the alterations which chemical and microscopical analysis enables us to discover in the blood into three classes. First, the alterations which arise from the principles which enter normally into the composition of this liquid being no longer found in the proportion which is compatible with the physiological condition.

"The normal principles of the blood in which the actual state of our knowledge permits us to follow these changes of proportion, are the globules, the fibrine, the albumen of the serum, the other different organic matters besides the albumen which we find in this same serum (fatty and other matters), besides the inorganic principles contained in the blood, and in particular the free alkali which it encloses, its different salts, and its water."

But there are other matters, particular secretions, which the blood may be supposed to contain in greater quantity in a state of disease, and which may thus be rendered more appreciable by analysis, and should, therefore, be sought after. This first class of alterations cannot be ascertained by the microscope, which fails to detect whether the number of globules be increased or diminished.

"Without a change in the quantity, the normal principles of the blood may be modified with respect to their qualities and their different physical properties. The microscope can, for example, signalize differences in the shape of the globules, &c. This constitutes a second class of alterations of the blood."

"Finally, it may happen that in the place, or by the side of the normal principles of the blood, new principles may be formed which have nothing analogous in the healthy state, and which may be compared in the blood to what accidental products are in the solids. Here is a third class of alterations of the blood, for the discovery of which ought to concur at once chemical and microscopical investigations. It is the microscope, for instance, which in similar cases will reveal the presence of pus in the blood, &c."

Confessing his inability to attempt even an incomplete history of all these changes, such is the circle in which M. Andral has restricted himself in pursuing his researches.

He begins by giving the peculiarities of the blood in two states of the body which are not exactly diseased, but which often complicate diseases and modify the symptoms; these are the states of plethora and anemia. In plethora the fibrine is not increased, but remains pretty much at the usual physiological standard; the serum also offers no peculiarities; the change is in the proportion of the red globules which is much greater, and that of the water which is much less.

"The physical properties of this blood are perfectly explained by the nature of the changes which its composition has undergone. Thus, before coagulation, the blood of plethorics is remarkable for its deep colouring, which is referrible to the great proportion of the globules which it contains. When it is examined after coagulation the serum is generally observed to be more or less coloured, that the clot is large, voluminous, of moderate firmness, and that it contains much serum; a buffy coat is never found on its surface; at most we are able to observe occasionally a thin and transparent pellicle, or some scattered rays, if the blood has flowed very rapidly from the vein. The considerable size of the clot manifestly depends on the great number of the globules, and its softness, as well as the constant absence of the buff, depends on the weak proportion of the fibrine relatively to that of the globules.

"The superabundance of the red globules coincides in them with a certain modification of the physiological state, and thus, with a certain number of pathological facts which appear to be a consequence of it. Thus, all the functions are generally more active, and there is a superabundance of life: digestion is quickly performed; respiration is favoured by the great development of the thoracic cavity; the circulation is rapid, the heart beats with force; but it is wrong to admit, as has been done, that in like cases its beatings may be accompanied with a *bruit de soufflet*. I have advanced this opinion myself, but more attentive and longer observation has convinced me that it was never so, and that, consequently, in cases where a *bruit de soufflet* in the heart or arteries has been observed in plethoric people, it was because the diagnosis was badly founded, and because, besides the plethora, there was another disease.

"Individuals whose blood contains a superabundance of red globules are subject to some special accidents, of which hitherto a very satisfactory explanation has not been given. Thus the vertigos, dimness of sight, noise in the ears, heat in the head, which they experience, have been explained by congestions of the blood to the brain; but these congestions have never been, in similar circumstances, anatomically stated, and the passage alone of a superabundant quantity of globules across the vessels of the encephalon appears to me a circumstance sufficient to account for it; but what is strange is, that if it happens, on the other hand, that globules in too small number traverse these same vessels, analogous accidents will yet present themselves; so that a quantity of globules, either too great or too small, trouble certain cerebral acts in the same manner."

An excess of globules in the blood also coincides with some kinds of hemorrhages. Finally, a general excitement of the whole organization, amounting to fever, may arise in those cases where the red globules are over-abundant. M. Andral observes that the phenomena of plethora, taken in relation with the composition of the blood in that state, may enlighten us on the part which the globules of the blood play in the organization.

In anemia a precisely inverse condition of the blood is found to exist, the red globules being exceedingly few in number, so much so, as sometimes to make one wonder how life can be carried on with so few globules in the blood. It is necessary to distinguish several kinds of anemia in relation to the modifications of composition which they cause in the blood.

In spontaneous anemia the globules alone are diminished.

"In the anemia which succeeds losses of blood more or less abundant, it may equally happen that the globules alone are found to be diminished; that is the first effect of all hæmorrhages; but if this augments or is renewed, there soon arrives a moment when the blood comes equally to lose its other principles, and the fibrine and the albumen of the serum are seen to diminish with the globules.

"It is thus that in a woman who has suffered very abundant metrorrhages, the blood only contains 21 in globules, 1, 8 in fibrine, and 61 in the solid materials of the serum. The water was raised to the enormous cipher of 918.

"Anemia may also be the consequence of certain appreciable modifications of the organism which exercise an influence on the blood. In this case the composition of the blood shows itself the same as in spontaneous anemia; that is to say, that the globules alone are diminished, whilst the fibrine and the albumen of the serum remain untouched. It is what takes plece in women with child, whose blood loses its globules without losing its fibrine."

M. Andral proposes the question, why women should be more subject to this singular alteration of the blood, in which the globules are so diminished, than men; and why they are particularly subject to it at a certain epoch of their lives?

Men, however, can also sometimes be attacked with spontaneous anemia; and they present the same symptoms as chlorosis in women. The long continued influence of lead produces also a cachectic state, in which the globules are diminished, but the fibrine and the other elements of the blood are normal. M. Andral believes the globules occasionally to be altered themselves "smaller, and not of their ordinary shape; they were as if broken and disseminated like fragments in the field of the microscope." The blood itself, after having been drawn, presents a small clot in a large quantity of serum; the clot is very dense, and often presents a buffy coat; sometimes, like the blood of pleurisy or rheumatism, it is more remarkable the more the anemia is considerable. He believes it to be in consequence of the fibrine being in excess in proportion to the globules; now wherever fibrine is in excess, and where the coagulation has not been too rapid, this principle is seen to accumulate on the top by itself and to form the buff. There is a fact about this buff in cases of anemia which M. Andral does

not mention, but which in all cases we have seen would serve to distinguish it from the buff of inflammatory cases: viz. that in these cases the buff and the red clot below it are distinct from each other by a clear line; both where they meet terminate abruptly; but in anemic blood the buff ends gradually in the red clot, as if the coagulation had been so slow as to allow the red globules to fall by degrees to the bottom.

"The blood cannot be deprived of a certain quantity of its globules without there ensuing a great prostration of the muscular system, a most remarkable general weakness, serious disturbances of the nervous system, which manifest themselves by different disorders of the understanding, of feeling, and of motion; different disturbances of the digestion, respiration, and circulation. Who does not know the numerous neuroses to which anemies are subject, their dyspepsia, their dyspnœa, their palpitations? Who has not observed the discolouration so peculiar of their skin and of their exterior mucous membranes, which is so naturally explained by the small number of coloured globules which yet run in their vessels?"

But what is less generally known is that persons may exhibit all the symptoms of chlorosis without the usual pallor, but, on the contrary, with often an appearance of plethora, showing that the diminution of the globules of the blood may first mark its existence in the different vital acts, and this perturbation is shown by perfectly identical symptoms.

"There is one phenomenon which auscultation reveals, and which constantly coincides with a certain diminution of the globules; it is that singular bruit de soufflet that the heart and arteries especially cause to be heard in all the cases of anemia, however inconsiderable. In order that it should manifest itself it is necessary that it is on the globules that the impoverishment of the blood should depend; it is not found when the fibrine alone has diminished, therefore I have never met it in those affected with scurvy, unless it had reached that period when the globules, which remained untouched at first yield in their turn. I have not met with this bruit de soufflet in the cases which will be spoken of further on, where the impoverishment of the blood is especially due to the diminution of the albumen of the serum."

Of eighty-eight cases where this bruit was heard, fifty-six presented it constantly, and thirty-two intermittingly. The following are the rules M. Andral lays down, with regard to this bruit de soufflet.

"First, when the globules have diminished sufficiently to be below the cipher eighty, the bruit de soufflet exists in the arteries, in

a constant manner. I have never found a single exception to this law.

"Second, when the globules have remained above the cipher of 80, the bruit de soufflet can again show itself, but it is no longer constant: we continue to hear it often enough, when the cipher of the globules oscillates between 80 and 100; it is met with again, but much seldomer, according as the cipher of the globules passes 100, and finally, it is no longer observed when the cipher of the globules is raised above the physiological mean.

"Moreover, whatever is otherwise the nature of the disease in which these diminutions of the globules exist, the bruit de soufflet of the carotids does not show itself the less; I have proved its existence in the most different cases, putrid fevers, eruptive fevers, pneumonias, acute articular rheumatism, and in a great number of chronic diseases. But in all these cases it only took place with the ciphers of the globules marked above.

"The bruit de soufflet is often present in women with child, which is in relation with the frequent diminution which the globules undergoes in them."

The intensity of the bruit de soufflet is generally subordinate to the degree of diminution of the cipher of the globules. But he found that no effect was produced on the temperature of the body from this cause, even where individuals only had 50, 40, 30, and even 21 parts in globules in the 1000.

We have given at considerable length the state of the blood in health, the proper means to ascertain the changes which it undergoes from other causes than disease and the peculiar alterations in plethora and anemia, because an accurate knowledge of these is essential in approaching the study of the blood in disease. We have, therefore, left ourselves little space for the detail of the alterations observed in the blood in various diseased states of the body. M. Andral gives the condition of the blood in fevers, in inflammations, in hæmorrhages, in dropsies, in some diseases commonly called organic, and in the neuroses.

Of these we shall briefly give the state of the blood in dropsies.

"It is now generally acknowledged that if many dropsies have their origin in a certain number of alterations of the solids, there are others which spring from an alteration of the blood. It has been said, in a manner sufficiently vague, that serous effusions may be the consequence of an impoverished state of the blood, or what has been called hydroemia; I will proceed to examine this opinion:

"And first, by the expression of impoverished state of the blood, very different states of this liquid may be understood. The blood may have lost its wonted richness, because it contains either less fibrine, or less globules, or less albumen than ordinary. In these three cases the blood ought to be equally regarded as impoverished, and each of the three produce dropsy."

M. Andral found that neither a deficiency of fibrine nor a diminution of the globules induced dropsy. He says, if it depended on the last cause that it should exist in chlorosis and phthisis, where the number of globules is reduced sometimes very low, and yet dropsy is rare in these affections, and then traceable to organic disease. In organic disease of the stomach of long standing, when he has found the globules very considerably diminished, dropsy has not ensued. In cancer of the uterus where frequent losses of blood have reduced the globules to a very small cipher, no dropsy has manifested itself, except œdema of the lower extremities from the pressure of diseased pelvic glands on the veins, or where diseased liver, cancerous masses in front of the spine, or chronic peritonitis exists. Even in cases where the loss of blood is sudden, and from this cause the number of globules almost instantly lessened, M. Andral has not found dropsy to follow, so that from numerous cases which he has observed, he comes to the conclusion that there is no connexion between this state of the blood and dropsy.

"Consequently, when dropsy exists we ought reasonably to suppose that the blood, at the same time that it has lost its globules, is impoverished in another manner; and as it is not the diminution of the fibrine which can bring about this result, we might ask if it is not owing to a diminution which has taken place in the albumen of the serum."

This, M. Andral found actually to be the case, in proportion as the dropsical effusion itself and the urine were found abounding in albumen, so the blood was found deficient of it. In Bright's disease the more the dropsy increases the more abundant the quantity of albumen which escapes from the kidneys becomes, and the less is found in the blood. It must not be believed that the effused fluid of dropsy is nothing more than the serum as it exists in the blood, for this is not the fact in any case of pure dropsy; the effused fluid, although containing the same materials as serum, being proportionably more watery, with fewer organic principles, particularly albumen. From the analyses of the fluid in numerous cases of dropsy, he found that that effused into the tunica vaginalis in hydrocele contained the most albumen; this he attributes to the other parts of the constitution being sound, as in a case where he examined the serosity, drawn from the belly of the same individual by several successive punctures; he constantly found that the oftener the punctures were repeated, the quantity of albumen contained in the serosity became less abundant, which appeared to him to depend on the progressively increasing debility of the constitution.

Reports on Health of Towns, 1 *and* 2, *ordered by the House of Commons to be printed.*

Report from the Poor Law Commissioners on an Inquiry into the Sanatary Condition of the labouring Poor of Great Britain. By Edwin Chadwick, Esq., Secretary to the Poor Law Commissioners.

Inquiries into the effects of endemic influence, and the sanatory condition of the inhabitants of towns, are not of recent introduction into medicine. Hippocrates, in the commencement of his book on air, water, and situation, says, when a man comes a perfect stranger to a city he should consider well the situation of it, how it stands with respect to the winds and the rising of the sun. For if it be a northerly or southerly situation, or if it fronts the rising or the setting of the sun, the effects cannot be the same. He should also consider what sort of water they use, whether standing and soft, or hard, and from high grounds and rocks, or salt, and such as will not boil well. The land should be considered, too, whether it be naked and dry, or woody and watery; whether in a bottom and suffocating place, or upon an eminence, and cold; nor should the way of living they are most fond of be forgot; as whether, for instance, they love drinking, feasting, and idleness, or are given to exercise and labour, or are lovers of eating, but not of drinking. Every one of these things ought to be considered, for if a person knows them well he will soon be such a master of the particular diseases of the place, and of the nature of the common things, as not to be at a loss in the cure of those diseases, or liable to mistakes.

He may then be able to foretel what the epidemic diseases of every approaching season of the year will be there, either in summer or in winter, and what particular diseases private men are in danger of from an alteration in their way of living, &c.

If to the above were added the influences generated by the crowding together of vast numbers in our large towns, and the more artificial mode of life of our times, we should have the materials of an inquiry sufficiently comprehensive to have emanated from the office of the Poor Law Commissioners of the present day, or to have occupied the attention of a committee of the House of Commons.

The questions of a sanatory nature that divide medical opinions at present have chiefly reference to *fever*, and may be said to be whether the decomposition of organic remains is a cause, whether the disease ever arises from the accumulation of healthy human beings without the introduction of an infected person; and a third question is, as to the effects of putrid ingesta.

Of those who deny the activity of the first of these sources one party use moderate and doubtful language, as "there may be a fever produced by malaria, but it is not contagious fever;" and the evidence, they consider, which has been brought forward to prove the question proves the presence of other causes of a less equivocal nature. Dr. Alison may be mentioned as a fair example of this class, and his opinion is given, as might be expected, with clearness and precision.

"In the Appendix to the 4th Report of the Poor Law Commissioners, it is stated by Drs. Arnott, Kay, and Southwood Smith, that the malaria arising from putrefying animal and vegetable matters produces typhoid fevers. Although I highly respect all those gentlemen, and approve of the practical inference, so far as it goes, which they draw from that opinion, because I have no doubt that vitiated air, like all other causes which weakens the constitution, favours the diffusion of fever, yet I cannot subscribe to their opinion that this cause is of itself adequate to the production of contagious fever. And if, trusting to that opinion, the public authorities should think it sufficient in any situation where contagious fever is prevalent, to remove all *dead* animal and vegetable matter without attempting to improve the condition of the *living* inhabitants, I am confident that their labour will be in vain. The true specific cause of the contagious fever, at least in Edinburgh, certainly does not spring from any thing external to the living human body."

In this passage Dr. Alison cautiously abstains from a denial of the influence of malaria farther than as a source of *contagious* fever; in other words, he leaves open the important question of the separate existence of typhoid, now infectious fever; and another distinguished physician of the same school even goes farther, and admits that—

"In great towns cases of the same nature are met with during the intervals between epidemics, and in a station of life where epidemic fever in epidemic seasons of the worst kind is seldom witnessed. A fever of this description, tedious in its course, characterized by much nervous and muscular depression, without any particular local disturbance, and especially without the marked disorder of the functions of the brain, which distinguishes most cases of epidemic typhus and synochus, was so prevalent among the better ranks in certain streets in Edinburgh some years ago, at a time when fever was not prevalent among the working classes, that a general impression arose among professional people of the existence of some unusual local miasma. A great variety of parallel facts might be referred to, all leading to the general conclusion, that a disease, if not identical with, at all events closely resembling synochus and typhus as described above, may arise without the possibility of tracing it to communication with the sick."

But what Dr. Christison considers probable or possible is proved by abundant evidence in the volumes before us:—we are tempted to extract one instance out of Mr. Chadwick's book, quoted from a Report prepared by a Commission of the Royal Academy of Medicine, which might alone suffice for this purpose.

"If an example," says the Report, "be necessary to justify this placing of circumstances as cause and effect, we shall find one in the terrible epidemic which desolated the commune of Prades, in the department of Ariège, at the end of the year 1838; out of 750 healthy and vigorous inhabitants of this commune 310 were attacked with the disease and 95 died, thus the deaths were one in every $3\frac{1}{4}$ cases. The cause of this epidemic, violent and sudden in its nature, and which broke out in all points at once, is not less evident. It proceeded from a sewer, the receptacle of all the water from the neighbourhood, and of the filth which the water brought with it, and of the dead animals of the district. The hot damp weather which preceded it no doubt augmented the activity of this focus of infection. The first persons attacked were the women employed in washing linen in this pestiferous pool, and the labourers working in the neighbourhood of it. This terrible epidemic recurred three times, which the individuals, in their simplicity, attributed to the influence of the moon, but which mainly depended upon the wind at certain periods passing over the infected pool, and bringing the miasma in the direction of their dwellings. If for want of sufficient description it is not possible to prove completely the similarity of the epidemic at Prades with the typhus fever, yet it may be inferred from the symptoms, viz., that when the skin was broken deep sores were formed, and that serous abscesses showed themselves in the lymphatic ganglions, that this disease was very similar to the ancient putrid and malignant fevers formerly described by authors, and which are entirely replaced in our *nosology* by the typhoid affection. The physicians of Ariège, in order to prove that the disease was not *contagious*, and to reassure the inhabitants, lay in the beds from which the invalids had been removed."

In another Report made on the Proceedings of the Conseil de Salubrité, the disease prevalent amongst the population in the towns is adverted to:

"We must be like the men so well painted by the Psalmist, to reject such evidence—*Eyes have they and they see not.* How shall we explain, or rather to what shall we attribute the difference that is remarked between the mortality of one quarter and that of another quarter of the same town, of one street and that of another street of the same quarter of the same village, or, lastly, the difference that is observed in this respect between the houses of the same street and those houses that are completely isolated? Misery, it is replied to

us, is the cause. Yes, no doubt, misery is a powerful cause, but it is so especially when it is driven back into the most insalubrious quarters, streets, and houses, where it lives habitually in the midst of filth and dirt, that is to say, in the midst of an infected atmosphere, and when there is no misery or when it exists in the same degree in the quarters, in the villages, in the streets, and in the houses with which the comparison is made; and stronger still, when poverty is met with precisely where there is the least mortality; in what is to be found the cause of this difference, if it is not in the insalubrity of the dwelling-places?"

If any unprejudiced person will read the evidence of the medical witnesses in the two Reports on the Health of Towns, and will examine that brought forward in Mr. Chadwick's report, he must, we think, arrive at the conclusion that thus much is proved at least, that in this country as in France a disease closely resembling typhus is produced by the miasm arising from decayed organic matter allowed to accumulate in various ways in many situations, especially in our large towns. Particular instances will presently come under our notice. But is this disease identical with our typhus, or does it pass into it? or does the presence of miasm act as an aid to the infection of typhus, and not as a distinct poison? These are questions which, however speculative and unimportant they may appear at first view, are really of a practical nature, and bear immediately upon any sanatory arrangements. As is usual on all disputed medical questions, ultra opinions are advanced on both sides. Thus Dr. Southwood Smith roundly asserts the affirmative of the first query, and Dr. Davidson maintains the truth of the last. Dr. Smith says:

"The room of a fever patient in a small and heated apartment in London, with no perflation of fresh air, is perfectly analogous to a standing pool in Ethiopia, full of the bodies of dead locusts; *the poison generated in both cases is the same;* the difference is merely in the degree of its potency. Nature, with her burning sun, her stilled and pent up wind, her stagnant and teeming marsh, manufactures plague on a large and fearful scale. Poverty in her hut, covered with her rags, surrounded with her filth, striving with all her might to keep out the pure air, and to increase the heat, imitates nature but too successfully; the process and the product are the same, the only difference is in the magnitude of the result."

Whatever may be thought of the identity or otherwise of the plague of Ethiopia with the fever of London, there can be but one opinion as to the evidence contained in this passage of a *fever* of the imagination. Such Will o' the Wisp illustrations

mislead us in our inquiries after truth, and savour much less of calm philosophy than of romance.

If Dr. Smith had even compared the tropical fevers with the *summer putrid fever* of London, alluded to by Erasmus in his account of the filth and want of water, ventilation, &c., of the city in his time, and described by Sydenham, Grant, and others, and still occasionally met with in some of its districts, and at some seasons of great heat and drought, there would have been nothing very violent or strained in the analogy; but he here states a case in which contagious typhus—an animal poison—would be generated in the living human body, and compares that case with the totally different one of a tropical endemic fever, in order, it would seem, to draw the conclusion, that *the endemic sources of London engender contagious fever.* Suffice it to remark, there is no proof whatever to be found, in any history of fever with which we are acquainted, of a fever which could be clearly proved to have arisen from miasm having been communicated by infection, while there are abundant instances of the contrary. We may refer to the history of the epidemic at Prades above quoted, and to the testimony of Andral, who says:

"In Paris, either in the hospitals or out of them, we never recognized in this disease the slightest appearance of a contagious character. In the hospitals we do not see it transmitted from the individual who brings it from without to those who are lying in the beds next to his own. Neither do we see that the patients who lie in a bed previously occupied by a person who has recovered from, or who has died of a dothin enteritis, are attacked by it; neither are the physicians or medical students who come there attacked with it, more particularly those who have to come in contact with patients labouring under the disease. Out of the hospitals what circumstances are more favourable to contagion than those generally found combined in the case of medical students who attend their companions when affected with typhoid fever? Shut up in a room, which in general is very small, they pay them the most assiduous and devoted attention night and day. If the affection were contagious almost all of them would contract it, and yet we do not remember to have seen the disease *even once* arise in this way in a healthy individual."

Extremes meet in this as in other cases; and while Dr. Smith, on the one side, asserts that miasma produces a contagious fever, other writers assert that contagion is the sole cause of fever, and miasma merely an aid to its diffusion, acting only by injuring the general health and facilitating the action of the human poison. Meantime an opinion is certainly gaining ground that the fevers produced by these sources are not really iden-

tical, but that as they appear for the most part at opposite seasons of the year, and in many respects under widely different circumstances, they are really two distinct diseases, arising from two poisons, and that neither has malaria aught to do with the one, nor contagion with the other.

We are anticipating our review of what is contained in these volumes bearing on the subject; but, meanwhile, we do not hesitate to assert, that any person of common powers of observation, who may be in a situation to witness the two forms of fever—animal infectious typhus, and typhoid fever arising from miasma—will concur in the views of Genhard, Stewart, Lombard, and others, as to the distinct nature of the two affections, and agree with the remark of the writer first named, that "they are widely different in their symptoms, anatomical characters, treatment, and mode of transmission." The consequences of this division, in a sanatory point of view, are highly important, since different precautions and preventive means are adapted to the two cases. There is no want of evidence to show that in the typhoid affection—occurring generally in summer and autumn, and influenced materially by heat and moisture—the sole means required, or sufficient for prevention, is the removal of the *miasm* which causes it. This is often done by heavy rains—which accordingly put a stop to such epidemics in many cases. In the infectious typhus a change of atmosphere must be effected by removal of the diseased person, if there be one, or by ventilation, in case the disease arises among crowded healthy persons. Bancroft, and a few others (the latest and the most sensible exposer of this doctrine being Dr. Watson), have mentioned that typhus never did arise from this cause. We could refer to many decisive facts to the contrary, but will merely take one from Mr. Chadwick's work, illustrative of the activity of the cause, and of the means of its prevention.

"One effect of the attention given to the condition of the workers in the factories has been that ventilation has been extensively introduced, and with marked effect on the condition of the work people. When I was at Glasgow a striking instance was pointed out to me of the beneficial effects of ventilation, when applied to the dwellings of the working classes connected with such establishments. I was informed there was in that city an assemblage of dwellings for their work people, called from its mode of construction and the crowd collected in it, 'the Barracks.'

"This building contained 500 persons, every room contained one family; the consequences of this crowding of the apartments, which were badly ventilated, and the filth, were, that fever was scarcely ever absent from the building; there were sometimes as many as seven cases in one day, and in the last two months of 1831, there were

fifty-seven cases in the building. All attempts to induce the inmates to ventilate their rooms were ineffectual, and the proprietors of the work, on the recommendation of Mr. Fleming, a surgeon of the district, fixed a simple tin tube of two inches in diameter into the ceiling of each room, and these tubes led into one general tube, the extremity of which was inserted into the chimney of the factory furnace; by the perpetual draught thus produced upon the atmosphere of each room, the inmates were compelled, whether they would or not, to breathe pure air. The effect was, that during the ensuing eight years fever was scarcely known in the place."

Whatever room for description may exist as to the *origin* of typhus among crowded collections of human beings, there can be none upon the place which this agent fills as an aid to infection. It is, beyond all doubt, first in this respect, and we have no doubt, often performs the part attributed, erroneously, to miasm, and that it is by its being overlooked that miasm is, by some, considered the cause of contagious fever, and by others an aid to its diffusion, an opinion equally groundless in both cases.

A very conclusive fact is related in Drs. Barker and Cheyne's Report, by Dr. Milne Barry, which shows strongly this difference in point of activity, so far as infectious fever is concerned, between non-ventilation and miasm.

"It is doubtful," says Dr. Barry, "whether the exhalations from animal substances in a state of putrefaction, or the accumulation of effluvia from living animal bodies confined in close rooms, with little or no mixture of atmospheric air, be most injurious, but as far as my observation extends I consider the latter as possessing a much stronger tendency to extend contagion than the former. In a place which was dreadfully infested with fever, called Hughes's-lane, the lower parts of the houses upon the ground floor were quite free from contagious fever, while there was scarcely a room in the upper part that was not crowded with wretched inmates labouring under contagion which could not be dislodged. Now the streets, yards, and houses below were in the most abominable state of filth, while the rooms in the upper part of the houses had no means of admitting the air, as the windows had been stopped up to escape the tax. An old friend of mine, who had escaped fever to a pretty advanced life, took the disease by enteringa garret without an open window, to see a servant who was labouring under it, and was very near dying in consequence of it."

This source of infection appears, from the different reports before us, to be in active operation in those districts in London in which silk weaving forms the occupation of the inhabitants. Describing the state of the White Chapel Union, Dr. S. Smith says:

"Alfred and Beckwith-rows consist of a number of buildings,

each of which is divided into two houses, one back and the other front; each house is divided into two tenements, and each tenement is occupied by a different family. These habitations are surrounded by a broad open drain in a filthy condition; heaps of filth are accumulated in the spaces meant for gardens in front of the houses; the houses have common privies open, and in the most offensive condition. I entered several of the tenements; in one of them on the ground floor I found six persons occupying a very small room, two in bed ill with fever. In the room above this were two more persons in one bed ill with fever. In this same room a woman was carrying on the process of silk winding. The window of the room is small, capable, if wide open, of ventilating the room but very imperfectly; yet this window is not only kept permanently closed, but is carefully and firmly pasted all round, so that not the slightest breath of air can enter. On remonstrating against this constant and total exclusion of the air, I was told by the woman at work that they are obliged to stop up the window to prevent the drying of the silk, which is always weighed out to them when they receive it, and they are expected to return the same weight."

And Mr. Byles, Medical Officer of this Union, in reply to the question, "Do you not find that fever attacks in greatest numbers those who are out of work?" states:

"On the contrary, the greatest number of the cases of fever we have, are those who fall ill during the time they are in employment. I think they are more attacked when in work where the windows are closed, and there is no ventilation; many of them are obliged to work with closed windows to keep out the moist air and prevent the dust blowing upon their work."

With such evidence as this before him, it is somewhat strange that Mr. Chadwick should decide, that

"The medical controversy as to the causes of fever, as to whether it is caused by filth and vitiated atmosphere, or whether the state of the atmosphere is a predisposing cause to the reception of the fever, or the means of propagating that disease which has really some other superior, independent, or specific, cause, does not appear to be one that for practical purposes need be considered, except that its effect is prejudicial in diverting attention from the practical means of prevention."

We think Mr. Byles himself furnishes a striking instance of the need of such a controversy, and that the man who could give such an answer as the following, having (as already shown) before his eyes the daily occurrence of fever from accumulation of human effluvia, needs the aid of some such controversy to enlighten him on the relation between cause and effect, and on the best "practical means of prevention."

After stating so strongly—(but it would seem *inadvertently*)—the close connexion between deficient ventilation and fever, he is asked "What are the chief remedies which your experience in this district would lead you to recommend for the prevention of *fever and contagious diseases?*" and his reply is, "The promotion of cleanly habits amongst the poor; the promotion of sewerage and drainage; having proper supplies of water laid on in the houses; the removal of privies from improper situations." All very good, but not having the least to do with the prevention of *contagion.*

An equally strong argument for the necessity of strict medical investigation into the *reality* of the sources of fevers, and for their accurate classification, is furnished by the opposite error to that which pervades the above extracts, namely, assigning to contagion the origin of typhoid as well as typhus fever, and attributing to miasm the secondary action of a *predisponent.* The evidence of Dr. R. B. Todd,* the distinguished professor of King's College, is a forcible example of exclusive contagionism.

The following extracts will show the practical consequences of this etiology.

"As to typhoid fever, I think it will be found that the great majority of medical men who have turned their attention to the subject, will agree in saying that *typhoid fever is propagated by a poison which is generated in the living body and not in the dead body.*"

"Is there a distinction between typhoid fever and typhus fever?

"The same terms are used very much synonimously; some writers do make a distinction; *typhoid fever is generally a milder form of typhus fever.*

"You use those terms pretty nearly as synonymous?

"*When I use the term typhoid fever I mean typhus fever, either the more severe form or the milder form; they are both propagated in the same way.*"

This is advancing backwards with a vengeance! Mr. Chadwick talks, as we shall see anon, of the "olden views of the inocuousness of miasma," and adduces them in support of the superiority of the present fashion of conducting medical inquiries by commissions under the seal of the Poor Law Office, and by committees of the House of Commons; but we question if any of the *ancients* ever committed himself by such exclusiveness and inconsistency as this modern professor and unquestionably able man in the above testimony.

He excludes all causes of fever but infection. He asserts

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* Report on the Health of Towns (interment of bodies).

that typhoid fever is mild typhus; and again, that it has not even this distinction, but is "*either the more severe form or the milder;*" and that they are both propagated in the same way.

If typhoid fever be a contagious disease equally as typhus, how happens it that its noncontagious nature is so generally believed in France, Germany, and America? And if it be but a milder form of typhus, how happens it to prove fatal in, at least, a treble proportion of cases compared with our Irish typhus? We have no such average mortality as one in every three or four cases; and if it be said this occurs in France, where a different mode of treatment to ours may influence the result, comparisons of mortality between this disease and typhus have been made in this country, and with a like result. Dr. Stewart, for instance, in an excellent paper on the two diseases, as observed by him in the Glasgow Fever Hospital, in the summer and autumn of 1836, makes the following observation:

"More particularly it was remarkable to observe, that while in the one disease the affection in those who presented no eruption was so slight, and of so short a duration, as to make it very questionable whether it deserved the name of typhus; and while the fatal cases presented an abundant, and generally a profuse eruption, those labouring under the other, which equally, *and even in a much higher proportion, went on to a fatal termination*, rarely presented any, and then only a very scanty eruption. It was further remarkable, that while in the one several successive patients had either been restored to health or fallen victims to the severity of the affection, the disease under which those laboured who lay side by side with them, though characterized by much less urgent symptoms, pursued its gradual course through weeks and months consecutively, and *in the majority of cases to a fatal issue;* and, finally, it was more remarkable still, that to complete the contrast already so striking, dissection proved the existence in the one disease of most extensive local lesions, in the other the absence of all local lesions whatever."

Our readers will not expect us to wade deeply into the mass of evidence of deplorable neglect of health and life contained in these volumes; a few examples will sufficiently illustrate the great influence that endemical sources exercise upon the mortality of our large towns, and the necessity for some interference to enforce sanatory regulations among a population so utterly regardless of them.

Some of this is given by men of the highest character in the profession, who have met, in the course of their practice, with instances which forced themselves upon their observation.

Sir B. Brodie gives the following:

"Some years ago I recollect there were some sewers opened near

Manchester-square, I think in very hot weather in summer, and the stench from these sewers was smelt by persons going by for a considerable time; and I understood that the result was a fever, which destroyed a good many lives in that district. I recollect once, when I had a patient on whom I performed an operation; it so happened that the night after the operation some sewer gave way, or some pipe gave way, and there was a horrible stench in the house; a young professional friend, whom I had left there, told me this in the morning, that the stench was such he could hardly sleep; the nurse and housekeeper were both taken ill; one of them died, and the other very nearly died; the patient died also; and I was led to believe that he died partly in consequence of the effects produced by the escape of this noxious effluvium."

Dr. J. R. Lynch states:

"I am medical officer to the West London Union. There are a great number of poor and a great number of courts and alleys, *cul de sacs;* the poor are always suffering under typhus fever. I have made out the history of hundreds; I have their names, ages, and every particular connected with them. We have a refuge to which the casual poor of the metropolis resort at night; we see them under all circumstances, the very humblest classes; they are in a state of terrible misery. I have had a great number of those labouring under typhus fever. Having directed my attention the last ten or twelve years to that, I have taken the trouble to trace it to its fountain head, and have always been able to trace it to a precise origin, namely, the decomposition of vegetable and animal matter. . . . . A great number of my patients reside on the banks of old Fleet-ditch, that is a locality from which fever is never absent, and it is always of a malignant typhoid character. I have seen on the banks of this Fleet-ditch young, ruddy-complexioned persons, fresh from the country, you would fancy they had strength of constitution to set this infectious agency at defiance; but let them be a short time in this locality, they become the victims of this disease, and eventually they become burdensome on our parish. The gradually inhaling this atmosphere undermines a sound constitution, and though they have at first a power of conservation of constitution to resist the contagion, they become predisposed to it and affected by it, and in many instances destroyed."

I have heard it stated that typhus fever can only arise from a living body, or from animal exhalations arising from a living body. In the many instances I have alluded to, it arose from the putrid emanations of decaying animal or vegetable matter. Here we have an instance, in addition to so many others, of the wrong employment of the term contagion, which has led to such confusion and dispute. This is remarkable, as Dr. Lynch alludes to the evidence given in his hearing by Dr. Copland, which is distinguished by the clear and scientific discrimination

of the different forms of disease produced by different morbific agencies, and by the precision and accuracy with which each variety is assigned to its own proper cause. Dr. Copland's evidence seems to us to be, in these respects, unlike that of any other witness; for while few medical men seem to have been blind to the operations going on under their eyes, none have shown themselves capable of expounding them to the profession and the public as he has done. We shall do better by extracting largely from his luminous remarks than by adding any of our own. He states:

"I believe that the health of large towns is influenced by four or five particular circumstances; the first, and probably one of the most important, is the burial of the dead in the large towns, the confined air, the general closeness of buildings, and the consequent want of ventilation; the circumstances connected with drainage and sewerage, and the contamination thereby occasioned of the water which is drunk by the inhabitants; so that in considering the burial of the dead in large towns, we have to consider not only the exhalation of the gases and emanations of the dead into the air, but also the effect that such burial has on the subsoil or the water drunk by the inhabitants. This is a circumstance which has not been so much attended to as it ought till recent times; but which has, in fact, occupied the minds of the thinking part of the medical profession ever since the days of Hippocrates, who has a long chapter on the influence of air, water, and localities, on the health communities, the chief agencies which vitiate or affect the health of the inhabitants of large towns."

After some remarks on the influence of water containing putrid organic matter in solution, to which we shall have again to advert, Dr. Copland gives the following lucid exposition of his views on the connexion between *typhoid* fever, as contradistinguished from *typhus*, and endemical emanations; and he is necessarily led to make some allusion to the opinions put forward by Dr. Todd.

In reply to the question—Do you consider that typhus fever originates from the decomposition of animal or vegetable matter?—he observes:

"Fever presents a great variety of forms, and those forms generally ought to be connected with the causes from which they originate. Typhus fever more particularly arises from a *seminium*, proceeding from individuals already labouring under disease, and from a number of individuals shut up in a close or confined atmosphere. The disease which we call the true typhus presents a general uniform character, a certain specific form, as small-pox or measles; but the malignant or putrid fever, caused by the emanations from animal matter, sometime mixed with vegetable matter in a state of decomposition, varies in its characters with the causes producing it, as in the

instances to which I have adverted. If the emanation from the dead proceeds in a very concentrated form, and is inhaled by a healthy person, it will affect the frame through the medium of the lungs and the circulating fluids, and the person may die in a very short period, this very malignant form of fever not materially perverting at the same time the mental faculties; but even in an early stage in typhus the mental manifestations are overpowered, and are entirely annihilated long before dissolution. Again, if in connexion with emanations into the atmosphere, the individual drinks water that is imbued with animal matter, the character of the fever will be then changed; it will then present, in connexion with more or less disposition to putridity, or in other words, to dissolution of the fluids and soft solids of the body; marked disorders, at the same time, of the stomach and bowels giving an enteric or a dysenteric character, or a gastric form, to the malady. We say that the fever possesses an enteric, dysenteric, or gastric character when, in connexion with the general disturbance of the functions of the body, those organs are particularly affected; and this morbific matter, taken into the first passages, will affect those more prominently than others."

"The question first put to you was suggested by the Report of the Medical Committee of King's College Hospital, received by the committee on the 25th of April. It proceeds to state, that your committee expressed their decided dissent from this opinion to which your attention was last called."

"They consider that typhus fever, like small-pox, is a disease propagated by contagion; or, in other words, is produced by a specific poison, generated in the body of a person affected with the disease, and no where else; and that consequently the primary sources of infection are the living and not the dead."

"Do you concur in that opinion?"

"I concur in it to a certain extent. I believe we all have the opinion that true typhus fever is a disease arising from emanations from a number of individuals shut up in an ill ventilated room labouring under disease. When once there is an individual labouring under that disease it will affect others if they are predisposed to it; or a substance, such as woollen clothes, capable of imbibing the emanations and retaining them, will convey the affection to others. But the malignant, or putrid fever, which has been called typhoid by some writers, in consequence of the close resemblance to typhus fever in many of its features, varies from it in one particular, and resembles it in another particular. It has been supposed that—in reference to malignant fever arising from emanations from the dead—if a number of individuals so infected were put into a close, or ill ventilated ward or room, the fever that would be propagated from those individuals might assume the character of typhus; but that is

a *questio vexata* among medical men. Some think the fever so propagated will not present the true typhus character; others believe that it will."

We would direct attention to the opinions of Dr. Copland on the effects of putrid ingesta, more particularly of water containing putrid gases, a cause of disease which is commonly overlooked, and which it has been rather the fashion to question the activity of, since Bancroft argued, that because certain savages eat putrid meat and fish with impunity, no injury to health could arise from this cause. Dr. Copland, it is well known, takes an opposite view in the articles on endemic influences and infection in his Dictionary, and he adduces some facts before the Committee which are worthy of attention.

"In looking," says he, "into the works of Sydenham, I have particularly remarked, that though he touches upon the subject of epidemics, and the particular form they assumed in London, he never made any mention of the causes of those epidemics, or their origin. One can scarcely read his accounts of the epidemics which prevailed after the great plague in 1665 and 1666, without being struck by the circumstance of the fevers, and, in fact, of the diseases generally epidemic for some years afterwards—having been chiefly caused by the emanations proceeding from the number of bodies put into the earth during the plague. I should conclude, from *a priori* reasoning with the light science has bestowed upon us, that after 100,000 bodies had been put into the earth during the latter part of 1665, and the beginning of 1666, the emanations from those bodies would operate to a great extent upon the health of the community, especially when the soil was, to a certain extent, acted on by the rays of the sun, for in many instances the dead were not covered by many feet of earth; and Dr. Sydenham informs us, that in the following three years after the season of the plague there was prevalent in London a putrid, or malignant fever, just what might have been expected. First there was a morbific influence produced through the medium of the atmosphere, affecting through the medium of the lungs and circulating fluids, those predisposed and less able to bear this mode of contamination; then the three years again following that period, the fever changed its character, and presented an enteric or dysenteric form, showing that by that time the water that had percolated, as it were, through the soil, and been used by the greater portion of the inhabitants, had become so contaminated as to occasion disease, varying in its character with the particular causes in which it originated. These facts are illustrative of principles which men of science would recognize in the present day, though not sufficiently adverted to when medical men view disease rather empirically than scientifically."

In reply to a question, if any facts proving the influence of

water holding putrid animal matter in solution, had come under his knowledge, Dr. Copland states:

"The circumstances that have come under my observation have been of a mixed cause, the admixture of animal and vegetable matter in river water, marsh water, and tank water. I have met with numerous instances of the injurious effects of these."

The evidence before us shows the deficiency of sanatory regulations in respect of proper supplies of water, and its consequent effect in other large towns, and not less than in London. Thus, in Liverpool, where the average number of fever cases in the population residing in cellars is thirty-five per cent. more than it ought to be, as compared with the general pupulation, the greatest want of water, and the most revolting adulterations of that in use, appear to prevail. Mr. J. R. Wood states (First Report, Query 2205), that—

"There is one circumstance which very much affects the atmosphere in those districts in which the cellars are particularly; there is a great deal of broken ground in which there are pits; the water accumulates in them, in which there have been thrown dead dogs and cats, and a great many offensive articles. *This water is nevertheless used for culinary purposes.* I could not believe this at first. I thought it was only used for washing, but I found that it was used by the poorer inhabitants for culinary purposes.

Birmingham presents a remarkable contrast to Liverpool in the exemption from fever which it enjoys, and it is not less distinguished for its abundant supply of water, as appears from the evidence of the eminent surgeon Mr. Hodgson. The condition of the wretched inhabitants of the cellars in Liverpool in a sanatory point of view is indeed deplorable, to judge from the evidence of Mr. Wood and Dr. Duncan. Mr. Chadwick gives two striking instances of the effects of drinking impure water; one, with which our readers are familiar, from Dr. Cheyne's paper on Dysentery, Dublin Hospital Reports, vol. iii. The following from Parent Duchatelet:

"When I visited last year the prisons of Paris with my friend Villaima, who was interested in prisons generally, I was extremely surprised at the proportion of sick in the hospital of St. Lazarus relatively to the whole population of the prisons. The prison, uniting all the conditions necessary to health as regarded its position, instruction, the dress and food of the prisoners who were constantly kept at work, was yet extremely unhealthy, and it was no easy task how to explain the much greater proportion of sick to what we remark in other prisons of a bad condition, and in which are found united all the apparent causes of unhealthiness. This, I must confess, has baffled all calculation, and has driven every one to say that there must be a

cause for the peculiarity, but that it could not be discovered. I do not despair to have hit upon that cause, and I believe it is to be recognized in the nature of the water drunk by the prisoners. Having tasted it in the wooden reservoir behind the house which was in bad order and full of plants of the genus confervæ, I found it had a detestable and truly repulsive taste, a circumstance which does not appear to have been hitherto remarked. Might not the cause then be detected in the chemical nature of the water of Belle Ville, and of the neighbourhood of St. Garvais, of which the prisoners drink exclusively? That proves it is the striking resemblance which exists in this respect between the water of Belle Ville and that in the wells of the entrance court of the hospital of the Salpetriere, which both contain a very great proportion of sulphate of lime, and other purgative salts. Now the venerable Professor Pinel and his pupil Schwilgne have remarked for more than twenty years the influence that the water of the wells of which I speak has upon the portion of the population of the hospital who make use of it; and they believe that certain affections, connected evidently with locality, cannot be attributed to any other cause, and particularly the disposition to chronic diarrhœa which is so often observed in this hospital. It turns out upon examination that the greater part of the sick who fill the infirmary of the prison of St. Lazarus are brought there for illnesses of the same identical nature. In the prison they are obliged to have recourse to the water of the Seine to cook the vegetables and other food, an evident proof of the truth or at least the probability of all that I have just advanced."

Our notice of these inquiries and reports has extended to so great a length that we have not space for any examination of the remedial measures proposed. Our examination, so far as it goes, of this portion of Mr. Chadwick's labours would lead us to suppose that it is intended to make the Poor Law Commissioners the directors and controllers of the regulations affecting the public health. We are told, in terms as precise as his bombastic and conceited style will allow of, of our total unfitness, as a scientific body, for any such duties, save under the guidance of the authorities of Somerset House, and there can be no doubt of their willingness to undertake the task of enlightening us. Take the following perspicuous passage as an illustration.

"A medical man who is restricted to the observation of only one establishment, may be said to be excluded from an efficient knowledge of even that one. Medical men, so restricted, are generally found to possess an accurate knowledge of the morbid appearances, or of the effects among the people of the one establishment, but they are frequently found to be destitute of any knowledge of the prevailing cause in which they themselves are enveloped, and have, by familiarity,

lost the perception of it. Thus it was formerly in this way, that medical officers on board ship, amidst the causes of disease, the filth and bad ventilation, and bad diet, were referring all the epidemic disease experienced exclusively to contagion from some one of the crew who was discovered to have been in a prison.

"We have seen that the local reports present similar examples of similar conclusions, from the observation of single establishments in towns; in which reports effects are attributed as essential to labour, of which effects that same labour is entirely divested in establishments in the country, or under other circumstances which the practitioners have had no means of observing and estimating. The various contradictory opinions on diet and the older views on the innocuousness of miasma, are commonly referrible to the circumstances under which the medical observers were placed, and examples abound in every district of the errors incidental to narrow ranges of observation in cases perplexed by idiosyncrasies, and by numerous and varying antecedents. It should be understood by the public that the value of hospital and dispensary practice consists in the range of observation they give, and that the extent of observation or opportunities of medical knowledge are influenced or governed by administrative arrangements. In several of the medical schools of the metropolis, however, the opportunities of knowledge are dependent on the cases which may chance to arise there. Fortunate administrative arrangements have in Paris greatly advanced medical knowledge by bringing large classes of cases under single observation. The most important discoveries made with respect to consumption, those made by M. Louis, were based on the results of the post mortem examinations of nearly 1300 cases by that one practitioner. Nearly all the important conclusions deduced from this extensive range of observations, were at variance with his own previous opinions, and the opinions that had prevailed for centuries. The later and better knowledge of the real nature of fever cases has been obtained by a similar range of observation, gained from the cases in fever hospitals. Applications have been several times made to the Commissioners by medical men engaged in particular researches, to aid them in the removal of the impediments to extended inquiry, by collecting the information to be derived from the sick wards of the workhouses and the out-door medical relief lists."

We were well aware of the desires of the Poor Law Commissioners to control the financial affairs of our Medical Institutions, but until we read the above we did not know that their anxiety was equally to regulate the scientific inquiries pursued in them; nor of course were we previously aware of the full force of that clause in Mr. Nicholls' bill, providing "rules for the *Medical Practice* in these institutions;" nor, truth to tell, had we previously so poor an opinion of our profession as a body, or of the present state of medicine as a science, as would call for

such remarks upon our errors of observation "in cases perplexed by idiosyncrasies, and by numerous and varying antecedents in opinions upon diet and the older views on the innocuousness of miasma." We had rather considered it a modern heresy to attribute to contagion the exclusive power of generating fever, and the illustrious names of Sydenham, Grant, Mead, Pringle, and others in our own country, with many continental authorities, might be cited in proof that the influence of miasma was not overlooked, as Mr. Chadwick would have us believe, till light had been thrown upon it by the Commissioners.

We never remember to have met a more exclusive remark on the subject than was evoked from a very able critic by the mass of trifling and inconsequential evidence published in the Fourth Annual Report of the same Commissioners, viz., that the philosophical inquirer, with only such materials before him, had no ground for any other conclusion in respect to malaria and fever than this, that they are both common attendants upon poverty.

As to diet, we have nothing to say on that subject; the Commissioners have settled all contradictory opinions on that subject, save such as we now and then read in the pale faces, looking "like Oliver asking for more," of an occasional subject of their experiments. There can be little room indeed for contradictory opinions, when the sole question is, what quantity will support life?

Bating these specimens of arrogance, we are pleased with Mr. Chadwick's book, and think our readers will find themselves repaid for its perusal in the valuable information on Vital Statistics which it contains.

Chapter on Administrative Means for the Extension of Medical Science. By A Barrister at Law.

On carefully looking among a heap of verbiage for the "Administrative Means," we find them to consist of the appointment of a District Physician, whose duties to medical science are to be the registration of the causes of death, and to the public something between those of an inspector and a scavenger. But let Mr. Chadwick speak for himself:

"On a full examination of the duties which are suggested for a district physician or officer of public health, that which will appear to be the most serious is not the extent of new duties suggested, but the extent of the neglect of duties existing. The wants, however, which it is a duty to represent and repeat as the most immediate and pressing for the relief of the labouring population, are those of drainage, cleansing, and the exercise of the business of an engineer, connected

with commissions of sewers, to which the services of a board of health would be auxiliary. The business of a district physician connects him more immediately with the boards of guardians, which, as having the distribution of medical relief, and the services of medical officers, I would submit may be made, with additional aid, to do more than can be done by any local boards of health of the description given, separated from any executive authority or self-acting means of bringing information before them."

With this lucid exposition of the advantages to medical science, to arise from the appointment of district physicians, and of the exalted nature of their duties, we leave the administrative portion of Mr. Chadwick's Report.

But we have still to learn upon what grounds Mr. Chadwick accuses the profession of maintaining, till enlightened by him, " contradictory opinions."

We would be glad to see the influences of infection, crowding, miasm, and ingestion of putrid fluids treated of, not merely as to their prevention, but investigated in reference to their *pathological* effects, and the different results which they produce upon the body when applied in different forms. We have remarked on the merits of Dr. Copland's evidence in this respect, and in his published writings the inquirer will find more full and accurate information upon those points so interesting to those who regard medicine as a science, and who would rather seek after truth for its own sake than for the notoriety to be obtained by figuring in the pages of such volumes as those before us—a notoriety which must have been the motive prompting the authors of some of the bald and meagre statements which constitute a considerable proportion of the evidence they contain. Any physician practising in such towns as those comprised in these reports may, if he please, find abundant materials for observation and reflection on the different effects of the above mentioned agencies ; effects, we venture to assert, so different in their nature and manifestations as not to be confounded by attentive observers, and having but one property in common—that they all have their initiatory movement in the blood. Typhus, typhoid, and the dysenteric fever have all their origin in the altered constitution of that fluid ; they are all results of that process, which by an analogy as old as the father of medicine, and repeated in similar language by his most distinguished disciples in all ages down to the present, has been compared to the fermenting process. We say *compared* to—it is only the adversaries of the doctrine who *confound it with* that process.

Many of our great practical physicians sneer at this hypo-

thesis without attempting to substitute anything more rational in its place; and they delight to confound together the different forms of fever, and to deny the validity of the distinctions drawn between typhus, the self-generating animal poison, and the incommunicable diseases produced by miasma; but are such persons consistent with themselves? Will they treat the fever with profuse measely efflorescence and disturbed cerebral functions, in the same way as the patient affected with the diarrhœa tympanitis, &c., of Dothin enteritis? We should think not. And however they may ridicule speculative distinctions as they are pleased to term them, they involuntarily make a distinction in practice corresponding to that which is pointed out by true theory.

We do not despair of ere long seeing the two classes of fevers recognized and admitted, and from this we may expect to date the commencement of an enlightened and scientific practice in place of much that is now uncertain, empirical, and perfectly unconnected with the true pathology of the disease.

A Treatise on Mental Derangement. By Francis Willis, M. D., Fellow of the Royal College of Physicians.

Insanity is viewed with trembling interest by every body; for, fearful as are its symptoms, and direful as are its effects, the seeds of it are scattered sufficiently thickly in the constitutions of every one of us to make it a *personal concern* with us, and to stimulate not only curiosity but alarm in our breasts, wherein the *proximus ardet* is, after all, the most inciting principle. But, over and above this cause for attention, there is the circumstance, anomalous in the arrangements of moral and physical nature, that a distinction so minute that it has escaped the detection of all human scrutiny, divides moral and social responsibility from complete community; guilt from innocence; pity in the breasts of mankind from execration and abhorrence; and, as far as we can presume to judge, mercy and commiseration in a future world from the condemnation attached by eternal justice to crime in a free and rational agent. Great as this gulf is, to cross the chasm is but a single stride, and it is often left to the uncertain testimony of casual observation, or even prejudice to determine, on which bank, whether of reason on the one hand, or fatuity on the other, that individual is standing, some one or more of whose actions form the object of concentrated curiosity to mankind.

"The subtle and shifting transformations of wild passion into

maniacal disease," says Sir James Mackintosh, "the return of the maniac to the scarcely more healthy state of stupid anger, and the character to be given to the acts done when near the varying frontier which separates lunacy from malignity, are matters which have defied all the experience and sagacity of the world."

It is the gradual shading off of reason into madness, the admixture of this shade with the highest manifestations of intellect, and the discovering of a glimmering of that light penetrating almost the darkest chamber of insanity, which occasions a nearly insuperable difficulty in drawing any fixed like of demarcation, and obliges us in the numerous instances which hover near the confines of the two states, to pronounce a hesitating opinion, to approximate only to a decision, and to allow ourselves in particular cases to be actuated by motives, perhaps, foreign from the actual examination before us; as, for instance, in the opposite circumstances, where a party may be hindered from making a wrong disposition of his property by being pronounced insane, and where he may be screened from culpability and punishment by the same decision; "for," says Sir Vicary Gibbs, "a man may be incompetent to manage his affairs, and yet responsible in a criminal point of view."

In proportion, therefore, to this uncertainty, and with a view to legal and medical justice, should be the efforts of science to take the soundings in all directions, to ascertain the bearings of the human intellect, to establish landmarks which should, if possible, give us the power to determine with some degree of accuracy in the majority of cases the outline of that shelving shore, along which the firm ground of sanity ends, and the gulf of delusion begins.

The little volume before us but slightly and incidentally discusses these matters; it is a practical treatise on the moral and physical treatment of the insane; in some parts it may, however, be considered as furnishing helps towards resolving the question, by accurately marking certain distinctive features observable in different forms of the disease; and appears under the sanction of a name which has hereditary weight in such matters. Dr. Francis Willis, the author, is the grandson of the well known Dr. Willis, who was instrumental in bringing about the wished-for event of the restoration, temporary as it proved to be, of George III. to reason; and the family have ever since not only carried on the institution, but continued to carry out the principles established by him for the cure of persons labouring under this malady, with a success, we believe, uniformly creditable to both.

The appearance of this, the second edition of Mr. Willis's

work, so long after the first, seems to be, in part, connected with the great and exciting question of the assassination of Mr. Drummond, but the principal object of the treatise is twofold; first, to show that in most cases of recent mental derangement, even the most outrageous ones which characterize the "high state," what the patient requires is *support*, not *reduction*; the malady being caused by a *weakness*, not an over-tension, of the nerves; and secondly, that the system of personal restraint, which has been so much exclaimed against by the false philanthropy of the present day, as a barbarous and absolute form of needless torture, is, in reality, the most merciful as well as the safest and most efficacious that can be used in certain cases; and that the dreaded names of "strait waistcoat," "chair," and "gloves," are applied to simple contrivances, which in numberless instances—wherever, in fact, they are used by competent persons, save the patients from danger and destruction, give him comparative relief, and conduce to the amelioration of his condition, and his ultimate recovery. We shall take occasion, by and by, to advert to this branch of our author's subject, as his statements and reasonings appear to us well worthy of the attention both of the professional and general reader. He takes it as an axiom, that insanity is a physical malady:

"Instead," he says, "of delirium, mental derangement, and insanity, being merely mental disorders, each of them must be, in fact and in its origin, a bodily one; moreover, although they may appear to be removed by remedies which were intended to divert the mind from its own thoughts, the cure is, nevertheless, brought about generally and really by the action of these remedies in the body."

He then proceeds to show that, the *nerves* being the immediate channel of communication between the mind and the body, on the healthy or unhealthy state of this part of the frame depends the health or disease of the mental faculties. This is Gaubius's doctrine; and Dr. Cullen, too, observes, that the state of our intellectual functions depends chiefly upon the state and condition of what is called the nervous power. So far the result of investigation seems to be tolerably satisfactory; but beyond this point it has been hitherto found impossible to go. What it is that constitutes disease of the nerves; what that state is which is called their health; how they act, and what they do; all this is a mystery; and the utter incapacity of science to approximate even to an explanation, may be gathered from the name given by our author and others to their healthy condition, a term borrowed from another science—TONE.

Of the mental disorder there are different degrees, differing in the nature as well as intensity of the symptoms. Our author

classes them into mental derangement, delirium, and insanity; and again, he subdivides mental derangement into two states, the "high" and the "low" state. These pass all from one into the other, and the mildest forms of the disease may, by neglect or improper treatment, end in confirmed insanity. The distinction seems to be this; in *delirium* the mind is engaged upon incoherent images, objects, and impressions, passing in an incontrollable succession across it, like clouds or dreams, and is accompanied by great disturbance in the general constitution. In *insanity*, on the contrary, there may be little or no apparent disturbance in the constitution, but the mind is fixed in a distorted position, from which it refuses to be removed, though awake to present objects. *Derangement of mind* hovers between the two extremes. Such is, in substance, Dr. R. D. Willis's explanation of the three degrees. Delirium is easily known from insanity, but there is the greatest difficulty in distinguishing mental derangement from this latter.

The high and low states of derangement, however differing in appearance, are shown to arise from the same cause, by the similarity of effect produced by the same remedies. In the former he conceives the usual treatment to be improper; blood-letting, especially topical evacuation, he asserts, in many cases only aggravates the disease; and he gives, among other examples, one case which we extract.

"The patient was a young lady, of a naturally irritable constitution, who, having been in a very nervous state for many months, was, from domestic occurrences, thrown into a most violent delirium; on the sixth day from the attack of which she was placed under my care. With short intervals of cessation, she had been continually raving for four successive days and nights; labouring, at the same time, under such irritability, that four persons had been employed to watch and prevent her from getting out of her bed. While in this state, and previously to her becoming my patient, leeches had been applied to her forehead and temples, cupping-glasses to the back of her neck, and a blister to her head; purgatives also were given; barley water with weak broth had been the only sustenance allowed. Her state, as I found it, was this; she had ceased to rave, probably from exhaustion, having been wholly without sleep; she had become obstinately silent, but was still in perpetual motion; her pulse was 130, her whole skin very hot, and completely parched; her face flushed and bloated; her eyes suffused with blood, and wide open, yet she could discern nothing; she was also unconscious of her evacuations; her tongue was brown, her lips and teeth covered with sores: in attempting to feed her with a spoon, she clenched her teeth; if we succeeded in putting any thing into her mouth, she spit it out after keeping it there a moment; so that it was impossible to administer any medicine without using force. Had the lady died in this state, and dissection

been desired, a turgescence of the vessels of the brain, water effused into its ventricles, or some other deviation from the healthy state, would probably have appeared. Her death might then have been attributed to one or more of these circumstances.

" Viewing this case differently, and, considering that she had been incessantly raving, till, from exhaustion, she could rave no longer; that she had not closed her eyes for five successive days and nights; that weak broth had been the only sustenance allowed her, I inferred, that although there might be some disease in the brain, either congestion of blood, or effusion of serum, the patient was necessarily nearly worn out, and her life in danger.

" Under this impression, therefore, I immediately ordered her two glasses of old port wine, and two hours afterwards three ounces of a decoction of bark with some of the tincture, as the only means of saving her life. In four hours, from my first seeing her, she was in a sound sleep, but only for a short time. Upon her awaking, the same quantity of decoction of bark was again given, when she slept three hours together. On the following morning her life was comparatively safe; although she was still unconscious where she was, and took no notice of persons in the room, she no longer clenched her teeth or spit; but, when breakfast was offered to her, she put the cup naturally to her mouth, and after obtaining more sleep from a continuance of these remedies, she was able to answer questions correctly: in short, her irritability began to subside, and her sense of feeling to return in some degree from the moment they were first applied."

But although medical means are the most efficacious towards the restoration of a patient, yet these will avail but little without a due cooperation of management.

" Medicine, I fear, will mostly be found insufficient of itself without a due cooperation of management. Few patients, in the early part of their illness, will acknowledge that they are indisposed, and, therefore, they will not listen to the advice of their friends. The malady increases, and they become, at length, so convinced of the truth of some erroneous idea which has taken possession of their mind, that nothing but restraint can prevent them obeying the impulse of their imagination. Hence it becomes absolutely necessary to remove them from their own home, from the presence of those accustomed to attend upon them, and place them under the care of strangers, who have made this malady their particular study.

" Of all the moral means most useful in the cure of mental disorders, restraint must be considered pre-eminent.

" Lunatics, or those whose minds are incurably unsound, and those persons who labour under delirium or derangement of mind, accompanied with bodily ailment, must not be confounded together, the treatment required being very different. The majority of lunatics may, by method, be rendered tractable. In them there is no perceptible constitutional disturbance. They are quite alive to what is passing around them. The very knowledge that the physician has the

power to put restraint upon them, if they indulge their humours to the annoyance of others, is generally a sufficient check; and this knowledge operates as strongly upon a lunatic as the presence of the master does upon a schoolboy. But the patient who is in a fever, who is restless and irritable, without sleep, insensible to what is said to him, yet bent upon doing what his disordered imagination urges him, is neither to be soothed nor frightened into obedience. Here we must use restraint. If we neglect it, we must be prepared to expect one of two consequences—either a fatal termination, or hopeless insanity. How without restraint are we to obtain that quiet which is so essential to the patient? How give food and medicine? How prevent him injuring himself and others? In vain shall we prescribe, if mistaken philanthropy can throw obstacles in our way. If we would effect a cure, our experience must be uniformly opposed to the patient's insensible and ungovernable state. Such restraints must be adopted as the case requires. None is more beneficial than the waistcoat, none more safe, and none more humane. I should speak more reservedly on this point had I not seen persons rescued by its use from a worse state, into which they must otherwise have fallen. It has often occurred to my family, and to myself, to be called to a neighbouring village to see a person, who had been without sleep for many nights, in a state bordering on delirium, struggling with those in attendance to leave his bed, and pursue the dictates of his disordered mind; and we have scarcely ever failed, in recent cases, to subdue this restless state by applying the waistcoat, and then administering Peruvian bark. I was called to three similar cases in the course of a few months. Many nights had elapsed without sleep; and those in attendance had a difficulty to keep the patient in bed. The waistcoat was put on. Decoction of bark was administered every three hours. Their involuntary and uncontrollable efforts soon began to subside. A profuse perspiration ensued; they fell asleep and awoke tranquillized; and all three gradually proceeded to convalescence without any relapse."

Have any of our readers met with an account (by way of contrast to this) of the public madhouse at Cairo? A large apartment is surrounded with strong cages, about four feet square, barred with iron in front; and in each of these is confined a human being, naked but for a covering of vermin and filth, having an iron collar riveted round his neck, to which a chain is attached, and in some instances run through a hole in the next cage, where it joins the collar of the neighbouring maniac. As the miserable beings that are here caged like beasts exist chiefly by the charity of the visitors, who purchase bread, &c., at the door to throw to them, the howl that is set up when a stranger enters is terrific; skinny hands are thrust forth to snatch at the morsel, lips slimy with famine receive it, while a cry of disappointment and rage issues from the other dens. Mr. Wilde, whose striking account we follow from memory, adds, *few who*

are once immured here ever recover. Let us contrast this with what Dr. Willis (our author's grandfather) states as the result of his experience in an extensive practice of many years: "Of patients placed under my care, within three months after the attack of the disease, *nine out of ten recovered.*" Such was his evidence before a committee of the House of Commons.

Lunacy, or confirmed insanity, takes the same division as mental derangement, into the high and low states; the one being characterized by violence, the other by dejection and a desire for death. "Both are apparently free from any bodily disease, and liable to pass one into the other." Dr. Willis looks upon these as identical with the *mania* and *melancholia* of the ancients, as he conjectures the corresponding states in derangement to be their *phrenitis* and *lethargus.* By these assumptions he is enabled to bring in a powerful array of authorities from the early medical writers in support of his views. It is important to recollect that there is no practical difference between the insane person who has been born so, and him who has lost faculties previously possessed; both are equally without them, and their conduct and treatment are similar; although it must reluctantly be conceded that the prospect of their becoming rational beings is alike, for, in spite of the humane provision of the law of England, that even a lunatic born shall, under all circumstances, be supposed capable of becoming sane, the thing is in most cases impossible, while he who has once possessed the use of his faculties may be deemed, even in the worst instances, within the power of medicine and treatment.

There are certain sets of prejudices and opinions which characterize, as a fashion, each succeding age of the world; and while there is generally found a show of reason for them (the most usual being the detection and exposure of some inveterate abuse), like all other fashions they are apt to run into extremes, and, in particular instances, to become ludicrous, absurd, and even mischievous. The fashion of the present day is philanthropy, a very good fashion, and one which it would indeed be far from our object to cry down. But even philanthropy may have its abuses; and we cannot help thinking that, in the feeling with respect to the insane, it is run to a silly extreme. The ignorant public exclaim against what shocks them, without taking into account the real state of the case; and the legislature then steps in, and, by a law, makes the memorial of a mistaken humanity and real absurdity permanent. Such a state of things seems likely to occur in the case of lunatics; the public mind has taken up the idea that personal restraint is unnecessary, and therefore torture, which of course it would be if it *were* unne-

cessary; and active measures are in progress, both in and out of parliament, to abolish the practice altogether. But before we stamp by an act the general opinion on the subject, it were well to hear what men, humane as those who exclaim against them, but accustomed to examine the matter as a profession, and well qualified to decide, may say; and here we have, perhaps, the highest authority we could adduce, speaking strongly and decidedly. An opinion emanating from our author bears additional weight, too, from his grandfather, the celebrated Dr. Willis, having been one of the first to introduce a mild and humane method of treatment, in place of the coarse and improper system of severity before generally exercised. Mr. Willis says:

"Some persons have gone so far as to suppose that all insane persons might be managed without restraint, a conclusion not warranted by reason, nor confirmed by experience. The system, indeed, of non-restraint has been so strongly advocated, and the public led to consider all restraint as cruel and unnecessary, and that a system of kind and watchful treatment is only required, that I cannot refrain from expressing my opinion, that, agreeable as this method would be to all humane and considerate persons who have the care of these unfortunate individuals, it will not *alone* avail. The minds of the insane must be operated upon by control, either in fact or in idea. The greater number may, and certainly ought to be, rendered tractable without bodily restraint; but we must attribute the orderly behaviour we are able to produce, to a consciousness of being under restraint, which all patients feel when placed under the care of those whom they soon find they must obey, by being obliged, from the first, to take their meals and their exercise, to go to bed, and to get up at the appointed hours; and, but for this fortunate circumstance, we should have great difficulty in keeping an otherwise ungovernable patient in a state of quiet subjection.

"Those patients who consider themselves sane and unjustly confined, as many do, use all the cunning they possess to elude our vigilance. The kindest treatment is no compensation to them for the loss of their liberty; and, unless they are restrained, or taught to restrain themselves, would assuredly not remain in confinement. It frequently happens, that the very threatening a patient with any particular restraint or discipline supersedes the necessity of its enforcement, and it is humane and prudent that this should first be tried; but, if positive restraint is required, it is for the ultimate benefit of the patient that the waistcoat should be used in preference to such half-measures as I have seen recommended, viz. that "two persons should hold a patient in his paroxysm," which is neither more nor less than inviting him to struggle for the mastery. I have witnessed the inutility and mischief of this method, by having had patients brought to me covered with bruises, in consequence of the struggles that had daily occurred between them and their servants, all which would have been prevented by the more merciful restraint of the waistcoat, which

is a most salutary remedy, as it at once puts the body into a comparative state of repose, and, by subduing the spirit, forces the mind to reflection, and leads to tranquillity, while the other creates contention and increases the excitement."

After describing the other "instruments of torture," and explaining their simple, humane, and effectual application, he adds:

"Would it not be equally just and reasonable to cast invectives on a surgeon for placing a man with a broken limb in a fixed posture, and rail at splints and bandages, as censure all restraint in the management of the insane, or those whose duty it is to employ it? May I not truly say that, upon this subject, humanity itself has exceeded the bounds of reason? The numerous cases of suicide, daily recorded by the press, and the painful recollection of the many eminent individuals who have fallen a sacrifice to the neglect of due caution and timely restraint, ought not only to check the present mania for its abolition, but carry with them a perfect conviction of the urgent necessity of its requirement, and should lead us to extol it as a mercy, rather than denounce it as a degradation."

But whilst the humanity of the public would relieve the uncured patient from his splints and bandages, and set him to walk about in the freedom of a broken limb, it is especially urgent that his sensibility of feeling should not stand in the way of its own intrusive investigation, and accordingly we have enactments which expose the most delicate and sensitive patient to the coarse *surveillance* of inspectors, who are also inspectors of prisons, and who must only aggravate and confirm the lesser degrees of mental derangement by a repetition of, perhaps, similar circumstances to what originally induced them. It is well known how slight a degree of delusion constitutes mental aberration sufficient to justify the having recourse to the beneficial treatment of an asylum. All are aware, how frequently it is those individuals gifted with the nicest and highest feelings who are afflicted with this malady; and how keen is the sense of degradation existing in many of them as they reflect on the state to which they are reduced; and how anxious are their efforts to conceal it. In spite of all this, the Act of 5 & 6 Vict. c. 123, makes it *compulsory* on the inspectors to have each particular patient in each licensed lunatic asylum in Ireland paraded before them at frequently recurring periods, and to put them through the terrifying process of examination, interrogation, and general scrutiny. Here is, indeed, a "restraint" infinitely more torturing to particular individuals than the strait-waistcoat; and then think of what the friends, relatives, and *family* of the sufferer must feel, when they consider that a *private* lunatic asylum is, to all intents and purposes, a *public* mad-house!

"The framers of our late legislative enactments," our author says, speaking of a corresponding Act in England, "are actuated, doubtless, by the best motives, but they are evidently not practically acquainted with the subject. They make no distinction between the incurable lunatic and the man who, from some misfortune or over-exertion of intellect, has become deranged for a time; but all are to be exposed to the same scrutiny by visitors and commissioners. Now the feelings of these two classes of insane persons are very distinct. The lunatic has mostly lost that sense of delicacy and right feeling which the other in his progress to recovery daily evinces."

"But, granting that the surveillance of lunatic asylums will generally improve the condition of the incurables, how does it operate upon those recently attacked? These patients are grievously pained by the visitation, perhaps so seriously affected, as to have their recovery retarded or prevented altogether. What can be more heart-rending to a delicate mind than to be exhibited as a madman to these appointed inquisitors?

"It is not unworthy of remark, that as long as disease is confined to the body, advice may be sought for, and be prescribed without any interference; but, when the mind suffers with the body, and the disease becomes tenfold more lamentable, and the necessity of advice more urgent, impediments are met with, seriously operating against a recovery; as, however alarmed the friends of an individual may become for his safety, from the daily increasing dejection they witness in him, they cannot pursue the method experience has proved most conducive to the removal of this state of mind, until he has first been certified to be mad, registered as mad, and liable to be visited as a madman by five or six total strangers five or six times a year, if his malady continues so long; when, perhaps, a few weeks or months might suffice to restore him; and he might pass the rest of his life without any return of his depression, though not without a painful recollection of this heartless exposure.

"The framers of these laws can never, I conceive, have contemplated the mischief they are likely to produce on this class of patients. A delicate female, even in a sound mind, could scarcely see four and five strange men enter her room without feeling some alarm; and can it be supposed that persons, whose nerves are already shaken, and who require to be kept free from excitement, can receive these strangers with impunity? The annoyance to those who are conscious of their state is more painful than I can describe. To speak even leniently of this measure, it is a cruel interference with the domestic affliction of private life."

Thus it appears, that while the condition of chronic cases may be ameliorated, there will be injury done in almost every instance of partial, temporary, or recent mental derangement; and though the incurable patient may be allowed greater freedom than he has yet enjoyed, many who might have been restored to reason and their families, will be hurried to their graves, or to

worse than death, of confirmed lunacy. In carefully looking over the enactments, the powers given, and the duties enjoined, it appears to us as the error of the system, that it is made *compulsory* on the inspectors to see all the patients every where. Had a discretion been given, so that such person, on a knowledge of the circumstances of the case, and the character of the proprietor of the establishment, and the feeling of friends, or of the patient himself, might forego for a time or altogether this personal inspection in particular instances; there might, indeed, be occasional mischief done, but far less than under the existing law. The sense and feeling of the visitors would point out to them where it would be necessary or judicious to make direct examination and where to abstain; and the reasons for such forbearance might be entered in the inspector's and patients' books. Surely, if a medical man were to prescribe strict quiet as the only means of preserving the life of a patient in an ordinary case of bodily sickness, and that it was insisted that a body of strangers should intrude upon him, disturbing and agitating him till his only chance of recovery was lost, the visit could not be more clearly intrusive than where the mind is the part affected, and tranquillity still more essentially necessary. But the public had taken alarm, it was necessary to set their suspicions at rest, and no half measures would satisfy them.

The provisions of the late enactments relative to divine worship within lunatic asylums leads us to notice some striking observations of Dr. Willis on the effect of religious instruction and discipline to the insane. Here, too, prejudice and fashion have to be combated; and without meaning to withhold our approbation of the laudable zeal of those who advocate its adoption, we must again listen to observation and experience, as well as argument, relative to it.

"Let us suppose," says our Author, "that a person of known irreproachable character imagines that he has been guilty of the worst crimes (a common case), and is unhappy from the fear that the Almighty will never forgive him; he surely can never repent of what he has never committed; but if, nevertheless, by religious instruction he becomes happier in the belief that he shall obtain forgiveness of the sins he has never committed, he would then be more strongly confirmed in his original delusive ideas, which it should be our object to convince him are erroneous, and make him disbelieve. Religion, instead of alleviating such a person's miseries, must add to his distress, by forcing his attention upon his imaginary crimes.

"Again, let us imagine a person beloved by all who know him, to consider his best friends as his most inveterate enemies, and that they have persecuted him, and blackened his character. Religion, which might teach a sane man to forgive his enemies, must add to the

miseries of the insane if it teaches him to do the same, because he must become more than ever convinced that his friends are his enemies. Religion, in this case, by bringing his attention to dwell on his delusions, will, instead of composing him, excite his anger and hatred against all whom he believes to be his enemies.

"Great stress is laid upon the advantage that those patients who are restored to their senses derive from religious instruction. Convalescent patients, it is true, derive the greatest comfort from it, and here arises the mistake, as if religious instruction had been instrumental to their recovery; instead of this being the cause, the desire of it is the happy result. Their convalescence is made manifest by their showing a proper sense of their religious duties, and by their seeking consolation by attending to them, of which I cannot mention a more excellent and laudable example than that of our late revered King, George the Third, who, on recovering from his severe affliction, went, by his own desire, to St. Paul's Cathedral, and returned thanks to Almighty God for the blessings he had received. Convalescent patients are, indeed, the only patients who can derive comfort from religion."

It is a question far beyond the limits of a paper like the present to discuss, what may be the tendency of religion with regard to the interests of those who cultivate it—how far, we mean, religion in the abstract may have a tendency to unhinge weak minds, and deepen the delusion of diseased ones. It is one which has been much examined and much written on, without, we think, any very satisfactory conclusion having been come to. We believe the world will very shortly see a series of valuable lectures on the subject by a deceased medical practitioner of worth and eminence in this city, who has left them for posthumous publication; but thus much seems to be clear, that if we take for granted Dr. Willis's axiom, that madness is a *bodily* disease, religion can have no beneficial effect *on the malady;* and then comes the question, how far it defeats the remedies the practitioner is applying for its relief. If we are brought to allow that it does, or may in some instances, counteract them, there arises yet another question, being, indeed the most important of all—is its cultivation so vitally necessary, so indispensable in the case of the insane, as that, though militating against the patient's cure, it ought yet to be enforced? To resolve this question, we have only to consider what religion is. It is a service enjoined by God to man, as a rational and responsible being, by which he is to rule his present life as a probationary state for another and a higher one. The same religion which teaches us to serve God commands obedience also to the moral and social code, and awards the same dreadful penalty in case of its infrac-

tion. Human laws are founded on the same view of the responsibility of the individual, and have jurisdiction only within the limit to which that responsibility extends. It is plain, therefore, that the same judgment which pronounces a man to be removed beyond the pale of earthly responsibility must calculate on his immunity from moral and spiritual censure, on the sanction of which, indeed, human laws are mainly based, and admit a similar course towards restoring him to his position with respect to the supreme being, as it does towards making him once more amenable to the laws of society and his country. But amongst the remedies adopted with a view to the reinducing of rationality, one of the most usual and powerful is a removal of all exciting topics—a diversion of the mind from its absorbing interests—a lulling of the fears, and quieting of the forebodings so usually tormenting the deranged patient—a humouring, in short, of the temper and disposition, which must not be relinquished for a course of mental discipline until the healthy function of the brain is re-established. Delusions have been permanently removed by giving way to them. A man fancies he is sick—affect to treat him as an invalid, and he may believe you restore him at length to health—argue with him for ever, and he will only the more devoutly believe in his own malady, and your incapacity to treat it. A system of *deception*, in fact, is frequently necessary, and therefore justifiable: and why? because the patient is not a responsible being, because the effort is to make him a responsible being once more; because the disease which interferes with his responsibility is a bodily one; because freedom from excitement (which opposition causes), is one of the essential requisites to his cure, and because deception is found practically to be the best way of preserving him free from excitement. It is plain, therefore, if this view be correct, that as the mode of teaching essential to religious instruction must have a tendency diametrically opposite to that rendered desirable to effect a cure, it is to be admitted, if at all, with great caution, the patient being removed during the continuance of his malady from that responsibility which could alone make its introduction paramount to every other consideration; and the object of the religious instructor himself being to introduce the deluded being, by as short a way possible, within the precincts of that condition, which, while it renders him once more obnoxious to social and moral laws, opens to him the inestimable privileges of Christianity, under the instruction which may be then safely and effectually afforded him.

A man would scarcely invite a sick friend to a feast; on the contrary he would wait till he was able to enjoy the dainties before

laying them before him; and so it is, in our opinion, with the insane as to religion. They are avowedly incapable of benefiting by it during their derangement, for they are then irresponsible beings, and the advantages of it can only commence from the date of their restoration to a sane mind. The object, therefore, ought naturally to be to bring that period about as speedily and effectually as possible, and this is best done by withholding the dangerous topic, in most cases, altogether from the patient.

To the *convalescent* patient, Dr. Willis has conceded, there may be good in admitting the consolations of religious exercise and instruction; but all he says tends only to shew that convalescence may make progress to recovery in *spite* of the introduction of the subject. It is well to set the public mind right on this head, for amongst the late reforms has been that of pressing the presence of a religious teacher yet farther within the privacy of lunatic asylums—with how great a *general* good effect, it is not easy to calculate, though no doubt there must be particular instances in which the regulation may prove salutary and a blessing. It will be seen, of course, that it is with a view to the eventual *religious* as well as temporal advantage of the patient, that we hazard these observations; what we aim at is the speediest possible removal of that veil, which excludes, not only the light of day, but of heaven, from the human mind.

The author of the volume before us dismisses, in a very few words, the topic—so interesting of late—of criminal monomania, although he avows his having put forward his book at the present juncture, in consequence of the public attention having been drawn that way; and the few observations he does make, seem but little satisfactory. All that has been said and written on the subject, only goes to show how completely a "jury case" every such question must be—that is, how impossible it is to frame tests, theories, or laws, which will be independent of the *facts* of each particular instance, and how perfectly it remains a matter of *opinion* what constitutes the derangement, and what the crime.

The definition of the word madness is an impossibility. It is a relative term, and is controlled in its signification by its correlative. In a *religious* point of view, all mankind may be said to be mad, *except* those few who embrace religion in its full intention. Indeed, they are in Scripture so denominated, as well by the inspired writers, as by our Lord himself.

If we test insanity by the *moral* code, or *philosophically*, we are forced to confess that *all mankind, without exception*, are insane. For there are a set of laws, universally acknowledged as binding on man; suited to his condition, essential to his welfare: simple, complete, comprehensive—assented to by the

easiest process of reason, promising to obedience, happiness in this life at least, and holding out the best chance for its continuance in another. To follow this code is therefore rational: to reject it, or to disobey it in assenting to it, clearly irrational, to a degree that amounts to insanity; and hence, even the philosophers of old pronounced a gross dereliction from morality madness; though the carrying out of their own principles to their proper limit justifies us in including the whole race of mankind in the imputation: for by none is the moral code observed in its integrity.

But in its popular sense, the term madness has reference to the social system, and thus practically we are bound to consider it, without allowing ourselves to indulge in metaphysical speculations as to its origin or influence. When that disease of the mind, whose point of zero is an unattained and unattainable perfection, works to such an extent, or in such a direction, as to trench on the boundaries the common convenience and necessity of mankind have drawn,—when it exceeds in degree or extent the limits we dare assign it, having reference to the safety of the individual, and the interests of the community,—when, in a word, it passes the confines of mere absurdity and error, and becomes peculiar and mischievous, then we fasten upon that malady, under a mitigated form of which we ourselves labour, a new name, and deal with it as an evil that must be prescribed for. All the affections of the insane have their counterpart among the sane. The paroxysms of mania and of passion differ only in degree,—"melancholia" and melancholy are alike; dangerous lunatics are but an aggravated form of mischievous men; extravagant delusion in confinement is eccentricity at large; monomania is but extreme abstraction to a particular subject, and so on.

No doubt it may be said, that disease of the body (as we have already had occasion to shew) generally, if not universally, accompanies mental aberration; but what is this more than saying, that the current of delusion, which in some is stationary, is quickened within others by some external circumstances, to a degree greater than ordinary? Natural disposition in some will produce the effects of madness in others. The degree of impulse existing constitutionally under ordinary circumstances in one man, will incite him to the murder, which only the preternatural and morbid irritation of the nervous system will prompt in another,—that is, the one is insane *naturally*, if we may use the expression, the other by disease.

It follows therefore, that what constitutes insanity, practically considered, is, if Dr. Willis's axiom be right, bodily disease; and socially, the presence of that disease in a suf-

ficiently aggravated form to interfere with the safety of the patient, the evident interests of his family, or the well-being of society.

The question which first suggests itself, therefore, upon this definition is, what is that form or degree of the disease, which places the patient out of his own power, and in that of others? in other words, what is the *legal* definition of insanity, in civil and criminal cases? To this question, even if there were a distinct and satisfactory answer ready, we presume not to give a reply. With regard to competency or incompetency in an individual to manage his affairs, and dispose of his property indeed, we pass the consideration by altogether as irrelevant to the subject in hand,—but criminal responsibility is so intimately connected with what we have been saying, that some observations towards ascertaining it are naturally called for. What the law pronounces in place of a definition, manifestly means nothing. "So long," says Lord Mansfield, "as they (lunatics) could distinguish good from evil, so long would they be considered amenable to justice." The question is as far from being settled as ever. What is "distinguishing good from evil?" Sir John Nicholl attempts to resolve the matter:—"It is only the belief of facts," says he, "which no rational person would have believed, that constitutes insane delusion." Would a rational man believe that he could benefit in this world or the next, by committing a murder under circumstances such as many of those exhibit, committed by persons, a doubt of whose sanity was never suggested? Lord Lyndhurst put the question thus to the jury:—"Did the prisoner know that in doing the act, he offended against the laws of God and man?" How should we deal with a case in which the indulged passions of malignity or revenge had excluded such considerations altogether? Might not any one bad passion practically obliterate them from the mind? or might not a totally false philosophy, or depraved religion completely remove their constraining power? Suppose an Atheist and Pantisocratist,—what laws, divine or human, would he admit the authority of?

So much for the inadequacy of the definition. There are, of course, innumerable cases in which, despite this inadequacy, there can be no hesitation in pronouncing a decision. Those in which there *is* a rational doubt, are comparatively few; but it is precisely those which need our greatest attention. The difficulty of the question does not lessen its importance to the party concerned, or to society, and it imposes upon the medical and legal professions the duty of sifting it to the bottom, while it may form an apology for even such unconnected and desultory observations as we are enabled to make.

It appears to us, then, that any attempt on the part of the

judge to explain to the jury what insanity is, is not only perplexing, but useless and unnecessary. It is enough for him to say—was the prisoner a responsible agent when he committed the crime? Let medical witnesses then state, in the abstract, what they consider the manifestations of insanity, and if an opportunity has been afforded them of judging, give their opinion of the state of the prisoner,* to aid, but not direct the jury in their opinion, and let it then rest with the jury† to say, whether they consider the prisoner responsible, or entitled to claim immunity from punishment,—in other words, guilty or innocent; for, on the one hand he may be *insane*, and yet *responsible*,—as Lord Mansfield has said—"there is a species of *insanity* in which the patient fancied the existence of injury, and sought an opportunity of gratifying revenge by some hostile act. If such a person were capable, in other respects, of distinguishing right from wrong, there was no excuse for any act of atrocity which he might commit under this description of *derangement*;" and on the other, of course, from various causes, the prisoner may be *sane*, and yet *irresponsible*. Had such been the course adopted on M'Naughten's trial, the public would not have had cause to exclaim as they did, at the *mode* of its termination.

Now, the admission that there may be responsibility attached to what is popularly and professionally called madness, leads us to go a step farther, and see whether there may not be some tests to satisfy the reasonable mind of the presence or absence of responsibility as regards criminal charges in insane persons. Here we must have recourse, not so much to common law as to common sense, and seek to discover what it is society means by what is falsely called punishment. The reformation of the culprit is certainly not looked to, at least in capital cases: nor, on the other hand, is retribution admitted as its object, such an idea being by all civilized nations repudiated as barbarous and unchristian. Its twofold object is, first, to protect society against the offender for the future; and, secondly, to act in the way of warning to others, who might be disposed to commit a similar offence. The least possible amount of (so called) punishment which can accomplish this double object, in each particular case, is the severest sanctioned by the constitution of civil society. As on the one hand bodily excitment, fever, irritability, &c., do not necessarily involve disease of the mind, so there may be mental unsoundness without the visible concomitants of flushing, suffused eyes, nervous agita-

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* See Mr. Guthrie's Observations, reported in the *Medical Times*, No. 182.

† Collinson on Lunacy, vol. i. p. 475.

tion, &c. Thus, the absence of these symptoms not being conclusive evidence of the absence of insanity, in cases even where there is little evidence besides to be got at, we are driven to seek for other marks as tests; and there is one, we think, likely to serve in most cases, not only for practical purposes, but also satisfactorily to a juryman as regards the party's criminal responsibility. Dr. Burrows observes of those labouring under "moral insanity," that the moral character is generally *changed* by the disease; thus, "the pious become impious, the liberal penurious, the sober drunken." Here, were the fact not confused with too numerous exceptions, we should have not only a test of lunacy, but also an argument in favour of the irresponsibility of such persons before a criminal tribunal; for it would be as hard if the perversion of a better nature, by what is clearly disease, were to be visited with the vengeance of the law, as if the object of former regard were to become one of aversion and abhorrence to his own friends and family as soon as his dispositions and propensities became morbidly perverted.

But where we find that a disposition originally suspicious, obstinate, reckless, and bloodthirsty has, under the pressure of events, or from the indulgence of its worst propensities, darkened down into the twilight of insanity, and there hovering on the verge of madness and malignity, incited a man to outrage and crime, we ought to be cautious how, in such an instance, we allow even the belief that the urgency of his passions had arisen to disease, to exculpate him from guilt, and admit him, when his atrocities have reached a certain extreme limit, to our sympathy instead of execration; and this appears to be one of the cases in Lord Mansfield's mind when he made use of the expression we have already quoted. Dr. Willis's account of the premeditation of the lunatic, therefore, does not satisfy us.

"When we see a man, rational on most subjects, arming himself with pistols, and coolly waiting for an opportunity to slay his victim on account of having received from him some fancied ill-usage, we are led to suppose, as this man seemed to premeditate the act, and was sane on other subjects, that he should be held responsible, and I was once greatly disposed to yield to this opinion; but upon looking more closely into the subject, I am now satisfied of the incorrectness of it. Speaking of a sane man, we can justly say he *premeditates* the act he has planned to perform, but this word does not express or embrace the intentional conduct of the madman; nor can I explain my sentiments more clearly than by saying that he is *haunted* by such a constant and irresistible impulse to fulfil the object on which his mind is bent as to overcome every healthy and natural feeling, and shut out from his consideration all regard for the consequences, however serious they might be to himself or to any one else."

We need, over and above all this, that the presence of "delusion" should be shown by some contrast with previous habits and propensities. At all events, where the present conduct bears a manifest resemblance to them, there is a presumptive argument against their being merely morbid affections. Pinel relates an instance of a boy who was tried for the murder of his companion before a French tribunal, and acquitted on the score of insanity, because having been indulged by his mother from his childhood in every bad passion, he became at last totally unable to restrain himself from acts of violence. A dangerous and, we think, unsound decision; for Dr. Copland's opinion, that "in many instances there is reason to believe that the *morbid* impulse to commit crime is only the climax of an habitual indulgence of passion and feeling, to the constant neglect of moral principle and restraint," is not conclusive of the question of *legal* responsibility, as the words of Lord Mansfield show; and in no case, we feel confident, would our tribunals now admit "moral insanity, free from hallucination," as a plea to a criminal indictment.

We are not insensible of the delicacy of the question, or the disadvantage of position which the reasoner must calculate upon, who seems to impute guilt where custom has pronounced acquittal; but, having reference to the end of punishment and the circumstances of such a class of cases, we cannot but think that the ends of justice would be best effected by disallowing, in particular instances, the plea of "homicidal monomania," even when medically established, as a complete bar of conviction, and leaving it to a jury to determine whether, the "morbid impulse" being only an exasperation of the natural disposition, the prisoner should not, under the circumstances, be held amenable to society for the crime committed remotely, though not immediately, in consequence of *responsible* depravity. For it may be considered that a criminal who has, by continued indulgence, reduced himself to this state is in a manner accessory, during his admitted sanity, to his own crime; and though it may be said that in thus giving the rein to his passions it was not his intention that they should result in acts of atrocity, yet taking the analogy of criminal law in the case of one man instigating another to an unlawful act (and we may view the homicidal monomaniac as a separate individual prompted by his former self) we shall find that, even admitting the absence of intention, he should justly be held liable.

Blackstone (Comm. b. 4, c. 3) lays it down as a rule, "that he who in any wise commands or counsels another to commit an unlawful act is accessary to *all that ensues* upon that un-

lawful act." Thus is such a person, as it were, what lawyers call an *accessary before the fact* to a crime perpetrated afterwards by himself, without the complete concurrence of his intellect; and an accessory before the fact is, in case of murder, on the highest legal authority, guilty in an equal degree with the principal, and punishable alike. (Hale's P. C. 615).

If we look back once more to the objects of punishment, we shall find that the course proposed is in accordance with both of them, and that even the presence, medically speaking, of insanity does not render it the less necessary for the public safety and the purposes of example and warning, that in certain instances the "law should take its course." For let it ever be remembered, with reference to one of these objects, that of warning to others, that not only would the effect be beneficial to those who, as yet in possession of their rational powers, are, by a course of license and depravity, stimulating a naturally evil nature to madness, but it must also operate as a check upon the increase of particular forms of monomania, which (and the fact forms a sort of commentary upon our argument) start into being on all sides, like a multiplied reflection, after the perpetration of some peculiarly signal act of atrocity, taking aspects numerous and formidable in proportion as the offender has been made an object of interest, or, above all, of immunity; and this latter circumstance is of consequence, as exhibiting a power of connecting crime with punishment, and calculating on the chances of ultimate impunity in the minds of such persons.

If it is asked, what right have you to punish a madman? we reply by demanding, do we not deprive him of his liberty? is not depriving him of liberty a punishment? do we not deal with him as with others, as seems best for the public good? Do the many who propose to abolish capital punishments, and would deal with maniacs as with sane criminals, attempt to question the right to *punish* them? As we have explained the word, the right is clear, for the idea of *retribution* is not included in it.

These points are, after all, too abstruse to discuss in any other than a practical manner. What society has to look to, is the good of society; and the suppression of criminal monomania ought to be an important public object. No danger is so fearful and so imminent as that arising from the reckless and undiscoverable treason of imitative insanity,—no danger so likely to be removed by making public examples. Madness is as cowardly as it is treacherous, and will be sure to steal into another path, if it sees the one it was walking in blocked up and bristling with defences. We have had of late, fearful evidence, as well of its *epidemic* as its dangerous nature. M'Naughten's case seems to have been one in which, in what-

ever way we consider it, the necessity of making an *example* was evident. Had the question not been taken for granted, that what the faculty call insanity was the point, and not the expediency for dealing with him as a criminal, we might have seen a more satisfactory termination to his trial. For it is not the case of the individual only we are to look to, but of those exalted persons whose lives are placed in jeopardy by this line of proceeding. We are ready to stake our reputation, that there will be more M'Naughtens found, and that the natural impulse for crime will continue to seek an outlet to its deadly ends by the way—*only safe one*—of monomania. We fervently hope that amongst the victims, One—that exalted personage, who has been already more than once marked for the *privileged* assassin's aim, may not be the object of yet more fatally premeditated attacks, and that, in our mistaken leniency towards those afflicted with this hideous "leprosy of soul," we do not compromise the safety—the existence of her for whom the wisest and the best of us ought to be ready and willing to shed his heart's blood.

D. P. S.

SCIENTIFIC INTELLIGENCE.

Clinical and Pathological Report of the Pneumonia of Children as it prevails among the Poor in London, by Charles West, M. D., Physician to the Royal Infirmary for Children, and to the Finsbury Dispensary.—If any person were to estimate the importance of pneumonia in early life from the space allotted to it in English works on the diseases of children, he would doubtless conclude that a malady concerning which the most experienced have thought it necessary to say so little, can neither be grave in its character nor frequent in its occurrence. Our tables of mortality, however, show that pneumonia is the cause of a larger number of deaths in childhood than any other diseases, with the exception of the exanthemata. It appears from the Appendix to the Third Report of the Registrar-General, that during the year ending May 22, 1841, 22,429 persons died within the Metropolitan districts under the age of fifteen. Of these, 3058, or 13·6 per cent. died of pneumonia; 2963, or 13·0 per cent. of convulsions; and 1216, or 5·4 per cent., of hydrocephalus. A very similar result is obtained by examining the returns from Manchester, Liverpool, and Birmingham, which are contained in the same report. In the year 1839, 11,164 deaths took place in these three towns, of persons under the age of fifteen. Of these persons 1348, or 12 per cent. died of pneumonia; 1615, or 14·4 per cent. of convulsions; and 493, or 4·4 per cent. of hydrocephalus. The slight excess in this case of deaths from convulsions cannot be regarded as invalidating the statement made as to the extreme frequency of pneumonia; but depends doubtless on the difficulty of obtaining an accurate return of the causes of death in places where there is a large proportion of migratory population, such as the Irish in Liverpool. That this is the true explanation of the apparent excess of deaths from convulsions appears further on observing, that in Birmingham, where no such disturbing cause exists, and where the registers may therefore be presumed to be kept with greater accuracy, the per centage of deaths under fifteen years of age from convulsions is only 7·0, and from hydrocephalus 4·0, but from pneumonia 16·0 per cent. Even though the above returns were not completely exact, they yet must be regarded as affording a close approximation to the truth, and as establishing the serious nature as well as the frequent occurrence

of inflammation of the lungs in childhood. A very large number of cases of this disease came under my notice at the Finsbury Dispensary, in the years 1841 and 1842, and at the Children's Infirmary in 1839-42, and the results of what I believe that I then learned are embodied in the following observations. For the opportunity of investigating both this and many other diseases of infancy during many years previous to my appointment to the office of physician to the Children's Infirmary, I am indebted to the great kindness of my friend ond predecessor, Dr. Willis; and gladly acknowledge the extent of an obligation which I can never hope to repay.

It will probably occur to some onr eading the following remarks, that a great discrepancy exists between many of the statements and opinions they contain, and those of French writers of deserved reputation. To account for this, however, it will not be necessary to impugn the accuracy of the observations of either party; since two causes may be assigned fully adequate for its explanation. These are the very tender age of many of the infants who came under the notice of our continental neighbours; and the extremely unfavourable hygienic conditions in which all children are placed, whether at the *Hospice des Enfans Trouvés*, or at the *Hôpital des Enfans Malades*. The investigations of Billard and Valleix were carried on at the Foundling Hospital, and consequently for the most part on children only a few days old; while no child labouring under pneumonia who came under my notice was less than a month old. It should too be borne in mind that the morbid condition of the lungs of new-born children, which depends on their imperfect expansion at birth (first described under the name of atelectasis pulmonum by Dr. E. Jörg), was unknown either to Billard or Valleix, and that even now the French are by no means familiar with it. But the condition of those children who are admitted into Foundling Hospitals is precisely such as most frequently gives rise to this affection; and, as Hasse has shown in his elaborate work on Morbid Anatomy, the symptoms noticed during life, and the appearances found after death in many of the cases described as pneumonia by French writers, are exactly such as characterize atelectasis pulmonum.

Ample evidence exists of the extremely unfavourable conditions under which children are placed in the Children's or Foundling Hospital at Paris. One result of this circumstance is shown in the endemic prevalence of diseases in those institutions such as do not exist elsewhere; another in the frequent complication of almost all diseases with other secondary affections. Of these secondary affections gastro-enteritis and pneumonia are the most frequent. So often indeed is a condition of the lungs resembling that produced by inflammation observed among the inmates of the Foundling Hospital, that some have asserted pneumonia to be an invariable complication of the diseases of new-born infants. The researches too of M. Becquerel, which were carried on at the *Hôpital des Enfans Malades*, where none of the patients are under two years of age, discovered traces of

inflammation of the lungs in the bodies of 49 out of 133 children who had died of various affections. From these facts and some others of a like nature, M. Becquerel concludes that pneumonia supervenes rarely in perfectly healthy children; that it occurs most frequently in those who are exhausted by previous disease, or placed in unfavourable hygienic conditions; and that it comes on in the course of acute diseases of specific adynamic character. To this opinion French writers almost universally subscribe, and some have even denied the existence of idiopathic pneumonia in children between two and five years of age. MM. Rilliet and Barthez likewise, though they do not agree to this proposition as absolutely true, yet admit that it is subject to but very few exceptions, since they met with only three instances out of 40 cases of pneumonia which occurred in children between two and five years of age, where the patients were previously in good health. Even between the ages of six and fifteen, idiopathic pneumonia, according to their observations, is rare, 6 only out of 20 children having been free from other disease at the time of its invasion.

It may suffice to have mentioned these facts without enlarging on the different features which disease must present among children who for the most part were not suffering from extreme poverty, and who were tended by their parents at their own homes, from those which it wears among the wretched inmates of the Foundling and Children's Hospitals at Paris.

[Dr. West here gives tables of 37 post mortem examinations of children who had died of pneumonia.]

The first conclusion which may fairly be deduced from these data is that lobar pneumonia attacks children much more frequently, in comparison with the other forms of the diseases, than has been imagined by French writers; and that differences of age do not occasion such a liability to one form of inflammation of the lungs, and such an immunity from the other form as would appear from their statements. Of twenty-two post-mortem examinations of cases of lobar pneumonia, nineteen are of children under five years of age, and ten of children under two; while two of the post-mortem examinations of cases of lobular pneumonia are of children between the ages of six and seven.

A more striking difference between the two classes of cases appears in the fact that five of the cases of lobular pneumonia supervened on hooping-cough, and that in another instance the disease complicated an attack of measles which succeeded to croup. In the remaining five cases indeed, it is said to have been idiopathic, but even here the bronchi were found either greatly injected or containing a very abundant secretion in their cavities. These circumstances give considerable probability to the supposition of some French writers, that lobular pneumonia occurs as the result of the extension of inflammation of the bronchi to the substance of the lung—a theory which would explain may of the peculiarities that distinguish it from lobar pneumonia. Its greater prevalence during infancy and early child-

hood than subsequently, might perhaps be accounted for in accordance with this hypothesis by the extreme frequency of catarrh among young children, and by the fact that in the great majority of cases hooping-cough and measles occur before the commencement of the second dentition.

The appearances produced by lobar pneumonia in the child do not require particular notice, since they differ in no important respect from those observed in the adult.

I once met with a condition of the lung (which I believe to be very rare), closely resembling what some have described as chronic pneumonia. The subject of this observation had suffered from cough and difficult breathing for a month before she came under my care, and died ten days afterwards. On examining the body a small quantity of clear serum was found in the cavity of the left pleura, and a few easily broken down adhesions existed between the left lung and the ribs. The right pleura contained from ℥ ij. to ℥ iij of a turbid, seropurulent fluid, and the lung was invested with a thin layer of yellow lymph by which it was in many parts connected with the ribs. The upper two-thirds of the upper lobe of the left lung were slightly congested, the lower third was in a state of gray hepatization, with purulent depôts in many of the pulmonary vesicles constituting the state described as vesicular pneumonia or vesicular bronchitis by different authors. The left lower lobe was in the first stage of pneumonia. The different lobes of the right lung were adherent to each other. The lower lobe was in the first, the middle in the third stage of pneumonia. The upper lobe was perfectly solid, of a light gray colour, resembling very much a piece of soap, smooth when cut, not soft, but easily broken. In its substance were patches of a red colour, like wine lees; soft and pultaceous to the touch, and breaking down into a kind of quagmire, in which no trace of pulmonary tissue was discernible. The lower edge of the lobe had generally this red appearance and pultaceous consistence, but little patches of it, some not bigger than a pea, were diffused through its substance in various parts. Neither the lungs nor any other organ in the body showed any trace of tubercle.

The condition to which the appearances in this case bear the closest resemblance is not that gray form of chronic pneumonia described by Andral, in which the lung retains its granular structure; but a state which has been described by Hasse in his Morbid Anatomy. That writer says that sometimes he has found "in children who have had symptoms of inflammation of the lungs, a light gray nearly white, or yellow, induration of a whole lobe or of several lobules, which seems to affect the upper lobes more frequently than the lower." The appearance is quite different from that sometimes met with in children when a whole lobe is converted by tubercular deposit into a solid, cheesy, substance; and I am the less disposed to consider the change as any variety of tubercular degeneration, owing to the absence of tubercle from all other parts of the body.

There is a condition of the lungs, described under the name of

carnification by MM. Rilliet and Barthez, and regarded by them as of frequent occurrence. I have also met with it, though neither so frequently, nor involving so large an extent of pulmonary tissue as in the cases described by those gentlemen. I have not, however, included it in the table of *post mortem* appearances, since some of the examinations there recorded, were made before I had met with their work, and consequently before my attention had been especially directed to it. They describe portions of the lung which have undergone this change as being depressed below the level of the surrounding tissue, of a violet colour, presenting, when cut, a smooth, red surface, yielding a bloody serum when squeezed, in which no air bubbles are contained, and in short resembling a portion of muscle. The comparison they make of lung in this condition, with a portion of fœtal lung is very exact; its appearance indeed is precisely such as is observed in infants who have died from atelectasis pulmonum. The advanced age of many of the patients in whom it was noticed by MM. Rilliet and Barthez, as well as by myself, forbids us to attribute it to that cause. They suggest that it may be a form of chronic pneumonia, but this supposition can hardly be considered tenable, if we bear in mind that in many of the instances in which it was observed the inflammatory process ran its course with great rapidity. Neither does it seem attributable to the pressure of fluid effused into the pleura, since in one only of MM. Rilliet and Barthez's eleven cases in which the lung was carnified did there exist any effusion into the sac of the pleura; a statement which my own experience fully confirms. This condition usually presented itself to me affecting a cluster of two or three lobules in the substance of a lung, or more frequently fringing the lower edge of a lobe; the lower edge of the upper or middle lobe being its seat more frequently than the lower edge of the lower lobe. I would not have alluded to a condition on the real nature of which I can throw so little light, but from the hope that the attention of others more favourably circumstanced for the pursuit of morbid anatomy may thereby be directed to the subject.

Closely allied to lobar pneumonia is that œdematous condition of the lung, not unfreqnently met with in children dying with chest affections in the course of dropsy after scarlet fever. In most cases where this state is found after death, the dyspnœa has either come on, or, at least, has been aggravated very suddenly, being attended with great distress, and exceedingly tumultuous action of the heart, and proving very rapidly fatal A considerable quantity of serous fluid is generally found in each pleura, both lungs are universally congested, and gorged with bloody, frothy fluid, which exudes abundantly on cutting into them. This is evidently not the result of mere position, since the upper are quite as much affected as the lower lobes. The congestion appears to exist in the same degree everywhere, and though the texture of the lung may be less firm than natural, yet I have never found any portion in a state of actual hepatization.

Lobular Pneumonia.—It has not been attempted in the table of morbid appearances to make that distinction between cases of

simple, and of generalized lobular pneumonia which has been drawn by MM. Rilliet and Barthez. It will be seen by a reference to the table, that in almost every instance, even if the inflamed lobules in one lung were distinct, the pneumonia had become generalized in the other. Perhaps, too, MM. Rilliet and Barthez would have found this to be the case more frequently, if the children who came under their notice had been placed in conditions more favourable to their bearing up under the disease, and if time had thus been given for the lobular pneumonia to become generalized.

First and second stages.—A lung affected with lobular pneumonia presents a mottled appearance, portions of a deep red colour being interspersed in the midst of others having a natural aspect. This condition closely resembles that of a lung which is the subject of atelectasis, but there is one point of difference by which the two states may very generally be distinguished from each other. In each, the dark portions of the lung are depressed beneath the general level; but in atelectasis this depression is real and owing to the dark portions never having been expanded by the entrance of air; in lobular pneumonia it is apparent only, being produced by the emphysematous distention of the surrounding tissue. A section of the lung presents an appearance similar to that of its surface, and shows even more clearly that the red portions are inflamed lobules, and the pale lobules those which have not been the seat of inflammatory action. It happens indeed comparatively seldom, that single lobules are found affected, the inflamed patches usually comprising four or five, which together form a mass of the size of a nut or an almond. These portions of inflamed tissue give to the lung an unequally hard feel, such as is described, though apparently without its cause being understood, in Dr. Watt's valuable monograph. It is there said in the account of the *post mortem* appearances found in one case, that "The lungs felt knotty, and uncommonly firm in some places; but on cutting into them no tubercles, such as are met with in phthisis, could be detected." If the patient lives for some time, the intervening substance usually becomes affected, and the lobular is thus converted into lobar pneumonia. This change does not appear to take place by the gradual extension of disease from each inflamed lobule as from so many distinct centres, in which case one would expect to see a gradual shading off of the inflammation from the dark, highly-inflamed centre, to the paler, less inflamed periphery; but sooner or later the whole intervening pulmonary substance seems at once to become the seat of inflammatory action which runs its course as in ordinary lobular pneumonia. It happens, indeed, sometimes in cases where an entire lobe is affected with lobar pneumonia in the first stage, that some dark-red and perfectly solid patches are found which might seem to indicate that the disease began as lobular pneumonia. But even here, there is none of that gradual deepening in intensity of the inflammatory appearances as we approach each solid lobule which must needs exist if lobular pneumonia became general by involving the different lobules in succession. In a few cases in which pneumonia, originally lobular,

was becoming general when death took place, I have found the pulmonary tissue intervening between the inflamed lobules "drier than usual, not at all engorged, as in Laennec's first stage, and of a bright-red colour from intense arterial injection;" in that condition in short, regarded by Dr. Stokes as constituting really the first stage of pneumonia.

Third stage.—In the greater number of cases of lobular pneumonia death occurs before the inflamed lobules have passed into the stage of gray hepatization, or the lobular pneumonia becomes general, and the third stage consequently presents no peculiarity. To this, however, there are occasional exceptions, the inflamed lobules either becoming infiltrated with pus, and then presenting on a small scale the same appearance as is seen on a large scale in ordinary gray hepatization; or each lobule becomes the seat of a small, distinct abscess; with numbers of which the lung seems riddled. These pulmonary abscesses were met with twice; both times in cases where pneumonia had supervened on hooping-cough. In one instance they were found in both lungs and coexisted with extensive tubercular deposit in those organs. It might indeed be objected to this case, that the supposed vomicæ were in reality softened tubercles, though it is my belief that no such error was committed, and that none of the tubercles had passed the crude stage. Be that, however, as it may, no such objection exists in No. 8, in which the vomicæ existed only in the lower lobes of each lung, while no tubercle was found in any organ of the body. These collections of matter which vary in size from that of a millet seed to that of a pea, are found in the centre of the lung as well as near its surface. They sometimes communicate distinctly with a bronchial tube, but at other times no such communication can be clearly traced. They are irregularly circular, not lined by any smooth membrane, nor surrounded by a barrier of indurated lung such as is often seen around small collections of softened tubercle. They may be further distinguished from tubercle by the circumstance that they usually occupy the lower lobes only, and that they are found in cases where all other organs are free from tubercle. It is decidedly a rare condition. MM. Rilliet and Barthez met with it only twice in forty-three *post mortem* examinations; and I but twice in thirty-seven.

Vesicular Pneumonia.—That state of lungs known by the name of Vesicular Pneumonia or Vesicular Bronchitis first excited general attention from a description of it contained in a dissertation by M. Lanoix. The appearance, however, is described by Dr. Watt who had observed it and referred it to its true cause. A lung, or a portion of lung which is the seat of this affection, presents an uneven surface; the inequality being produced by the presence of a number of small, circular, yellowish prominences, which bear a considerable resemblance to crude tubercles. They may, however, readily be distinguished from tubercle, for not only do they almost always occupy the lower margins of the different lobes, but on puncturing any one of them with the point of a scalpel, a drop of pus will exude, showing them to be small collections of matter. The cavity in which these

purulent collections exist appears to be that of the extreme pulmonary vesicles, a fact which may be ascertained by tracing a minute bronchus to its termination in one of these little sacs.

This condition is a very frequent complication both of lobar and lobular pneumonia, when it fringes the inflamed lobes, especially at their lower margins. Occasionally, too, it involves the whole of the middle lobe of the right lung, but it will be seen by a reference to the table that it seldom constitutes the chief lesion. In each of the four cases also in which vesicular pneumonia was the most prominent morbid appearance the lungs presented signs of the other forms of pneumonia in a more or less advanced stage; the only exception to this rule being in No. 1, in which puriform secretion was contained in the pulmonary vesicles at the upper part of the upper lobe of the right lung uncombined in that situation with any of the other forms of pneumonia.

Complications—*Affections of the bronchi.*—The state of the bronchi, and the nature of their contents were noted, though not with all the minuteness desirable in twenty-five cases. The following general results will be found, however, very nearly accurate. Some degree of increased redness of the air-tubes exists in most cases of pneumonia; in lobar pneumonia, however, this redness is rarely intense, and is very often met with only in those situations where the substance of the lung itself is inflamed. In lobular pneumonia, intense congestion of the air-tubes is much more frequently observed, and is especially remarkable in the lobular pneumonia, which supervenes on pertussis. The bronchi are oftener empty in lobar than in lobular pneumonia, though in the former it is common to find puriform secretion in the bronchi near to any part which has passed into the third stage of pneumonia. Sometimes, too, abundant mucous fluid is found in the air-tubes while their lining membrane is quite pale; the accumulation of fluid in these instances being attributable to the inability of the patient to expectorate. In lobular pneumonia secretion of some kind or other is usually contained in the bronchi. It is oftener mucous than puriform, sometimes scanty, occasionally very abundant, and in this case it is not unfrequently very tenacious, and of a consistence approaching to that of false membrane. In these instances the secretion is usually more membraniform in the larger bronchi, more fluid in those of smaller calibre, which are sometimes rendered impervious to air by its quantity. I have found this secretion nearly approaching the membranous form only in two cases, in both of which it was associated with lobular pneumonia. Many points connected with his affection are undetermined: and some French writers lean to the opinion of its being an essential disease, a true croup of the bronchi, and regard the pneumonia with which it is associated as a frequent but not necessary complication. I do not feel myself competent to offer an opinion on the subject, but will merely observe, that in neither of the two cases above alluded to were the symptoms observed during life different from those of ordinary pneumonia.

Dilatation of the bronchi was observed in eleven instances, but

it was possibly overlooked in some cases where it did not exist in a very marked degree. This dilatation was never irregular, as it is occasionally in the adult, when it gives rise to an appearance which has been likened by Laennec to that of some marine fuci. It always presented the tubular form: was limited, when slight, to the smaller bronchi; but when considerable it likewise involved those of larger size. It will be seen by reference to the tables, that it was in cases where pneumonia had supervened on hooping-cough, that this dilatation existed in the most marked degree. The same tables also show that the measure of dilatation of the air-tubes bore no proportion to the amount of fluid they contained; a fact which may further prove that some theory other than that of their mechanical distention must be adopted in order to explain this occurrence. The change effected by the inflammatory process in the vital contractility of the tube is probably, as Dr. Stokes suggests, the chief cause of this condition, to which in cases of hooping-cough is superadded the influence of the violent inspirations which occur during the paroxysms of the cough.

Emphysema.—The extreme frequency of emphysema as a complication of infantile pneumonia renders some notice of it necessary. It was found occupying the upper part of each lung, and frequently fringing the lower edge of each upper lobe. It was usually most considerable in cases where severe bronchial symptoms had existed, but was also very extensive in some cases which had never been marked by violent cough, but in which the inflammation involved a very considerable extent of lung, and ran a very rapid course. Interlobular emphysema was observed in four cases, sometimes simply dissecting the different lobules from each other, at other times giving rise to a number of vesicles containing air which covered the surface of the upper lobe of each lung.

Pleuritis.—In twelve of the thirty-seven cases no traces of inflammation of the pleuræ were found; in five there existed old adhesions more or less extensive, and in twenty there were the marks of recent inflammation. In twelve of the twenty cases both pleuræ were affected; in six adhesions existed only on the right, and in two only on the left side. One of the cases of double pleurisy might be characterized as slight; in five others the disease, though slight on one side, was extensive on the other, and in the remaining six extensive pleurisy existed on both sides. In seventeen cases adhesions between the costal and pulmonary pleura and the presence of more or less lymph on the surface of the lung were the only signs of pleurisy; but in eight cases there was also effusion of a notable quantity of fluid. In three instances this effusion was serous; in the remaining five it consisted of a turbid, sero-purulent or purulent fluid.

The above-mentioned results, which agree very closely with those obtained by MM. Rilliet and Barthez, show how little foundation exists for the statement which has been made, that "there does not appear to be much tendency to pleuritis in the young subject." This error has most likely arisen from Dr. Maunsell applying to children of all ages, that which is true only of those who are very young. It

appears probable, indeed, from the researches of M. Ch. Baron, that the liability to pleurisy is much greater among children above two years of age, than among those who are younger; since "of 3,392 autopsies of children from one to two years old, pleurisy was found only in 205, and in 79 the pleura was otherwise unhealthy from some non-inflammatory cause; or, in other words, inflammation of the pleura was found only in six per cent., while in 181 autopsies of children from two to fifteen years old, the pleura of 158, or 87 per cent. presented signs of inflammation."

Pericarditis.—Of the three instances in which pericarditis coexisted with pneumonia, one was a case of rheumatic pericarditis; in the other two the pericardium was probably affected by the extension of the inflammation to it from the pleura. M. Ch. Baron mentions two instances in which he believes that this occurred, and two years ago a little girl was under my care in whom signs of pneumonia had existed for some days, and a pleural friction sound had been heard for a short time, but had again disappeared when a to-and-fro sound became distinctly audible, accompanying the heart's action, and continued to be heard until the patient died. Unfortunately a *post mortem* examination could not be obtained.

Tubercle.—Tubercles were found in ten cases either in the lungs or the bronchial glands, or in both. In five they coexisted in the two situations, in one they were found only in the lungs; in four only in the bronchial glands, and in one of these four a single gland was affected, and that had undergone the cretaceous change. Comparatively rare, however, as it is to meet with tubercle in cases of acute inflammation of the lungs, there is a kind of bastard pneumonia which is by no means unusual in infants whose lungs have undergone very extensive tubercular degeneration, such as is seldom met with after the first two years of life. It comes on insidiously in infants at the breast, or in children in whom the process of dentition is not completed; its symptoms, consisting in some exacerbation of the previously existing fever and increase of the cough and dyspnœa, attract but little attention, and serious alarm is not excited until it is seen how little they are amenable to any treatment. Its course is generally slow, occupying a fortnight or three weeks, but instances do occur in which the fatal termination takes place much more speedily. A lung which has been the subject of this morbid process presents a singular appearance; parts of it being of a solid texture, and yellowish white colour from tubercular deposits, interspersed with patches of a deep red hue, which are the lobules that were not involved in the tubercular degeneration, but which have become the seat of inflammation.

Causes of Pneumonia.—I have now noticed all the chief points in the morbid anatomy of pneumonia which my own observation could serve to elucidate, and pass next to the examination of those circumstances which favour the development of the disease.

Influence of season.—The season of the year has always been regarded as exercising considerable influence on the depelopment of pneumonia, which has been generally supposed to be most frequent in

the later winter and early spring months. The proportion borne by cases of pneumonia to all the cases, 2,450 in number, that came under my notice at the Infirmary for Children, in 1841 and 1842, taking the mean of the two years, is shown to have been, during each three months, as follows:—

In 1st three months	. . .	5·1 per cent.
2nd ,,	. . .	2·5 ,,
3rd ,,	. . .	3·8 ,,
4th ,,	. . .	5·8 ,,

Although this table does not quite accord with the generally received opinion as to the season when pneumonia is most prevalent, yet it tallies exactly with the results presented in the third Report of the Registrar-general. It appears from that document, that the greatest mortality from pneumonia, among persons under the age of fifteen years, takes place in the month of December; and on a comparison of the different quarters of the year, it will be seen that the deaths from pneumonia are to the deaths from all causes, of persons under fifteen, in the following proportions:—

In 1st three months	. . .	15·3 per cent.
2nd ,,	. . .	11·4 ,,
3rd ,,	. . .	8·9 ,,
4th ,,	. . .	18·7 ,,

Age.—The age of the subject appears to exercise a very considerable influence in predisposing to pneumonia. During the years 1841 and 1842, 118 cases of idiopathic pneumonia came under my notice. . . .

During the first five years of life, the cases of pneumonia bore the proportion of 10·3 per cent. to the total cases, while during the succeeding five years they were in the proportion of only 1·3 per cent. of the total cases. It will further be remarked, that during the first two years of life the proportion is as high as 17·5 per cent., and that the period when pneumonia is most prevalent coincides exactly with that during which the process of dentition is going on most actively; namely, from the sixth to the eighteenth month. . . .

Sex.—Of the 118 cases which form the subject of the foregoing table, sixty-five occurred among boys, fifty-three among girls; and the bills of mortality for Manchester, Liverpool, and Birmingham show a similar excess of males among the deaths from pneumonia under puberty. . . .

Catarrh.—The authors of the most popular English work on the diseases of children say, that they "doubt much if pneumonia ever occurs in young children as a primary, idiopathic affection;" and express their opinion that it always comes on as a secondary affection in the course of bronchitis. This assertion, coming with the weight which it necessarily receives from the deserved reputation of its authors, must, if erroneous, lead the practitioner into serious mistakes. That it is erroneous I feel fully persuaded. In fifty cases of idiopathic pneumonia I have carefully noted the mode of attack, and find that in only fifteen was it preceded by catarrhal symptoms. . . .

From the detail of the *post mortem* appearances produced by pneumonia, and the investigation of the causes which give rise to its occurrence, we pass next to the examination of the symptoms by which it is characterized.

Symptoms of Pneumonia.—Idiopathic pneumonia presents some differences in its course, according as it is or is not ushered in by catarrhal symptoms. The latter being the most usual may first claim our attention, after which any peculiarities may be pointed out which distinguish the form that supervenes on catarrh.

First stage.—Idiopathic pneumonia, unattended with catarrhal symptoms, is usually preceded for one or two days by a condition of general feverishness, exacerbated towards evening, with fretfulness, pain in the head, and great restlessness at night; or, if the child sleeps, its repose is unsound; it talks in its sleep, or wakes suddenly in a state of alarm. Cough comes on; at first short and hacking, but often it seems to cause no uneasiness to the child, and is so slight as hardly to attract the parent's notice. The thirst is considerable, the appetite impaired, the child showing distaste for solid food; or it begins to eat greedily, then suddenly leaves off, with the half masticated morsel in its mouth. The tongue and lips are of a florid red; the former is less moist than usual, and is generally coated in the middle with a thickish white fur. The bowels are generally constipated, and vomiting is not infrequent, especially in infants at the breast, who suck eagerly and by starts, then vomit the milk unchanged, and soon seek for the breast again. In them, too, even in this precursory stage of pneumonia, the tongue is sometimes quite dry. If, while a healthy infant is sleeping, the mouth be gently opened, it will be observed that the tongue is applied to the roof of the mouth, and that respiration is carried on through the nares. So soon, however, as the lungs become affected, even when no other symptom exists than general febrile disturbance, and, perhaps, the vomiting above alluded to, the infant will be seen no longer to breathe solely through his nose, but to lie with the mouth partly open, and drawing in air through it. This imparts to the tongue its preternatural dryness, and the same inability to respire comfortably through the nares causes the child to suck by starts. The infant seizes the breast eagerly, sucks for a few moments with greediness, then suddenly drops the nipple, and in many instances begins to cry. As the disease advances, these peculiarities in the mode of sucking and of respiration often become more striking, but it is at the onset of the disease that it is of especial importance to notice them, since they afford most valuable indications of its real nature. Their value too is so much the greater from their being independent of those accidental circumstances which may modify so many of the other signs of pneumonia. There is not always marked dyspnœa at this stage of the disease, and the frequency of the pulse and respiration is so much modified by position and other causes, that at the commencement of pneumonia very great dependance could not be placed on them, even if the fretfulness of the little patient, or its fears which the presence of the medical attendant often excites, permitted them

to be counted with accuracy. Auscultation, too, if alone relied on, might possibly not guide the practitioner at once to the true nature of the disease; for all the abovementioned signs may exist, associated even with very notable increase in the frequency of the respiration, and in older children even with pain referred to the chest or abdomen, without any other auscultatory phenomena than intense puerility of the respiration with, perhaps, an occasional sibilus.

It is not always, however, that the advance of the first stage of pneumonia is so gradual as has just been described, for sometimes a child who has gone to bed well wakes towards morning in a state of alarm, refusing to be pacified, with a flushed face, and burning skin, and hurried breathing, and short cough. This sudden supervention of pneumonia is not so often met with among infants at the breast as among children from two to four years old. The alarming nature of the symptoms usually induces the parents to apply at once for medical aid, and cases which have commenced thus tumultuously appear to be as amenable to treatment as those which seemed at first far less violent. Even in cases where treatment has not been at once adopted, the storm generally subsides in twenty-four hours, and the disease passes into the second stage without presenting any further peculiarity.

Second stage.—The first stage of pneumonia for the most part passes gradually into the second, the symptoms of disturbance of the respiratory organs becoming by degrees more and more apparent. Infants who hitherto had had moments of cheerfulness in the early parts of the day, or about noon, now no longer wish to be removed from the cradle or from the recumbent posture in their nurse's arms; and older children have quite lost all interest in their play, they become drowsy, ask to be put to bed, and cry if taken up. The respiration is now evidently hurried, the abdominal muscles are brought into play to assist in its performance, and the *alæ nasi* are dilated with each inspiration. The cough has become much more frequent; it still retains its hardness, but lasts longer, sometimes coming on in paroxysms, and often seems to cause pain, the child crying when it comes on, and labouring to suppress it, an effort which appears only to make it last longer and return more often. The bright flush of the face and the florid tint of the lips have gone, but the heat of skin continues. It is now a pungent heat, which becomes more sensible the longer the hand is kept in contact with the surface. It is often unequal, the trunk being intensely hot, while the extremities, particularly the feet, are cold; and on inquiry it will be found that the temperature varies much at different times. The face has assumed a puffed, heavy, but anxious appearance, and when the child is very young, or the pneumonia very extensive, the lips put on a livid hue, which is also very evident around the mouth, while the face generally is pale. Anorexia continues, but the thirst is generally very urgent, and, in children who are not at the breast, vomiting for the most part ceases. Infants who suck, still very frequently vomit the milk, perhaps owing to the urgent thirst they feel inducing them to suck too greedily, and thus overload their stomachs; since they generally vomit almost immediately after

leaving the breast, while they do not reject small quantities of fluid given from a cup or spoon. It will also be observed that the respiration of a child is now greatly hurried by the effort of sucking, that he drops the nipple panting from his mouth, or has not breath sufficient to make the vacuum necessary to bring the flow of milk.

Auscultation now detects mucous or crepitant rhonchus at the lower part of each lung, in which situation the air enters less freely than elsewhere. There is much difference even in cases which appear closely to resemble each other as to the extent of lung through which crepitation is heard, as well as in the character of the crepitation itself. Usually, however, the crepitation is confined to the infra-scapular region, and it is of that kind which is kown by the name of *sub-crepitant.* The results of percussion at this stage are often not very marked, but frequently a diminished sonoreity of the lower parts of the chest as compared with the upper, may be detected, and the impression conveyed to the finger is that of greater solidity below than above the scapula. This last sign is often very valuable, since it may be perceived at a time when the ear cannot clearly detect any actual dulness on percussion.

Third stage.—In idiopathic pneumonia, unpreceded by catarrhal symptoms, death hardly ever takes place in this stage; but if the disease is left to itself, or if it is unchecked by the remedies employed, the second stage passes into the third; a transition which usually takes place in from twenty-four hours to three days. The respiration now becomes more laboured, and though its frequency is sometimes diminished, it will be found to have become irregular; several short and hurried inspirations being followed by one or two deeper, and at longer intervals, and these again by hurried breathing. The cough sometimes ceases altogether, or if not it is less frequent and looser, since it is now produced by the child's efforts to clear the larger air-tubes from the accumulating secretions. The voice is often lost, the patients speaking only in a hoarse whisper. The face looks sunken, the extremities are cold, and though the surface of the trunk is still hot, yet the skin has often lost something of its previous dryness, and clammy sweats break out, especially about the head. The pulse is extremely frequent and small, and its beats so run into each other, that it is almost impossible to count them. The child is extremely restless, tossing about from side to side, as much as its reduced powers will permit, or it lies in a state of half consciousness, though sensible when spoken to, and fretful at being disturbed. If raised hastily from the recumbent posture, or if put to the breast, the great increase of dyspnœa which is immediately produced shows how seriously the respiratory organs are affected. In many cases too the livid hue of the face and of the nails are further proofs of the great impediments which exist to the decarbonization of the blood. This condition seldom lasts above two or three days; for either life becomes gradually extinct, without the supervention of any new symptom, or convulsions occur which are followed by fatal coma, or the child recovers from it for a

few hours, only to suffer a second attack of convulsions, and a return of the coma, in which state it dies.

The disease, however, does not always terminate fatally in this stage, but a kind of imperfect recovery sometimes takes place. A diminution is obvious in the more alarming symptoms; the patient begins to express some desire for food as well as drink, and even has occasional gleams of cheerfulness. The cough which had almost or altogether ceased, returns, but it is hard and hacking as in the second stage, and though there is no urgent dyspnœa, the breath is habitually short. The skin is hot, dry, and harsh; the tongue is red, dry, and sometimes chapped, or presents small aphthous ulcers at its edges; diarrhœa is not unfrequent; the child wastes daily, and dies in the course of a week or two, worn out and exceedingly emaciated.

The peculiarities which distinguish that form of pneumonia which is preceded by catarrhal symptoms, may be enumerated in a few words. The disease in this case often comes on insidiously, and developes itself gradually out of the preceding symptoms without its being possible to fix the exact date of its attack. At other times, however, there is a well-marked accession of fever and dyspnœa, and an aggravation of all the symptoms sufficient clearly to point out the time of the supervention of the pneumonia. The fever and heat of skin are less than in the other form of the disease, but the dyspnœa and distress are usually greater, and the face presents from the first a more livid hue. The cough is less hard, but it oftener comes on in paroxysms which greatly distress the patient; the respiration is more hurried and more irregular, and this irregularity comes on at an earlier stage of the disease. Mucous and sub-crepitant rhonchus are generally heard very extensively in both lungs, but the true pneumonic crepitation is unusual; and the inflammation being in these cases very often of the lobular kind it may happen that no predominant affection of the lower lobes can be discovered. Head symptoms are more frequent; the patients' rest is disturbed, and they often mutter in their sleep, and have far more restlessness and jactitation when awake. Convulsions and coma more frequently precede death, and death occurs at an earlier period than in the other form of pneumonia.

Such is a sketch, confessedly a most imperfect one, of pneumonia in childhood. It may be well to attempt, by more minute details on some points, to fill up the numerous deficiencies in the portraiture. Sydenham indeed was able, within less space than this rude outline has already occupied, to draw pictures of diseases, so graphic and so true that all the observations of after years have found in them little to add, nothing to expunge. They, however, who can never hope to emulate so great a master, must content themselves with literally following his instructions, that "morborum phænomena clara ac naturalia, quantumvis minuta, per se accuratissime adnotentur; exquisitam pictorum industriam imitando, qui vel nævos et lævissimas maculas in imagine exprimunt."

The modifications in the character of the respiration in pneumonia, and the physical signs of the disease are of such importance

as to merit most careful examination. Some acceleration of the respiration is almost always observed in cases of idiopathic pneumonia, but its degree affords no certain measure of the extent of the disease, nor will it be altogether safe to infer the absence of pneumonia from the non-existence of dyspnœa. It is my belief, however, that marked dyspnœa will be found in all cases of lobular pneumonia, and also in all those cases of lobar pneumonia which have been preceded by catarrhal symptoms, or are associated with them. It is often absent, or so slight as to be readily overlooked in the pnemonia which complicates diarrhœa, remittent fever, and other abdominal affections—as also in some cases where the thoracic symptoms are masked by the signs of cerebral or abdominal disease, constituting the *pneumonia larvata* of the old writers, in which but for the aid afforded by auscultation, the true nature of the ailment would probably not be discovered. The frequency of the respiration does not in general continue progressively increasing from the outset of the disease to its fatal termination, but its maximum frequency usually coincides with that stage of the disease at which the crepitant or sub-crepitant rhonchus has attained its greatest extent, and sinks again when bronchial respiration and dulness on percussion indicate that the lung has become solid. When the attack of pneumonia is sudden and violent, and unpreceded by premonitory symptoms, the respiration sometimes reaches its greatest frequency within the first twenty-four hours; at a time when the auscultatory signs are scarcely developed, and when the ear detects nothing but intensely puerile respiration with occasional rhonchus or sibilus. In lobular pneumonia, which sometimes runs its course in four or five days, death taking place before any portion of the lung has become hepatized, the respiration may go on increasing in frequency until death. It is in such cases that I have observed the respiration more accelerated than under any other circumstances, and in one child so affected I counted 108 inspirations in the minute. Although the respiration often sinks in frequency on the supervention of hepatization it does not by any means return to a natural condition, but almost always becomes irregular. One or two slow inspirations are now succeeded by three or four very hurried, and it will be observed that now, while the help of the abdominal muscles is called largely into play, the lateral expansion of the chest is almost none. The marked influence too, of removing the child from the recumbent posture, and placing it in a sitting position, in causing great acceleration of the breathing, at once shows that the diminished frequency of the respiration is not the result of any favourable change. It appears then that unquestionably valuable as are the indications furnished by the frequency of the respiration, there are many other points beside the mere number of inspirations which merit to be taken into account. Of greater value than the frequency of the respiration considered alone, is its frequency as compared with that of the pulse. Whenever with a diminution in the frequency of the respiration, the number of the pulse sinks too, we have a sign of amendment on which the most thorough reliance may be placed. It is of importance, however, always to bear in mind, how easily both the pulse and respiration are

accelerated in young children ; they ought both therefore to be counted while the child is in the recumbent posture, and before it has been disturbed or alarmed by auscultation, or by the examination of any other symptoms. It is better, too, if on any occasion this order of investigation cannot be followed, or if the child is fretful and cries at any attempt to ascertain these points, not to persevere lest we be led by so doing to form some erroneous conclusions as to the condition of the patient.

Physical Signs.—The physical signs of pneumonia are no less important in the child than in the adult, but the practice of auscultation in the former is attended with difficulties which do not occur in the latter. To some, indeed, these difficulties have appeared so great as to induce them to regard the application of auscultation to young children as impracticable, while others insist on the insufficiency of the physical signs to establish an accurate diagnosis between bronchitis and pneumonia, and allude to cases in which "though unquestionable results of pneumonia were found after death, there was no crepitant râle and no bronchial respiration." The valuable monograph of MM. Rilliet and Barthez, however, has sufficiently proved the possibility of deriving most important information from auscultation, and it is my conviction that with a little tact and a good deal of patience, pneumonia may be detected by its physical signs in the child, almost as surely as in the adult. It is true that infants will not tolerate the application of the stethoscope, and that they will seldom allow any examination of the front of their chest ; but the whole posterior part of the thorax may almost always be examined, and such an examination yields results which are of the greatest value. In practising auscultation I have usually found it best to have the child taken from its cot and placed in a half-sitting posture in its nurse's arms. It is now possible, kneeling by the nurse's side, to listen to the whole posterior part of the chest unperceived by the infant, who does not appear to be incommoded by the pressure of the head against its back in the same manner as it is by the application of the stethoscope. Percussion, too, may in this way be made upon the finger of the other hand so as to afford very useful information. Even in cases where children are most fretful and alarmed, and resist every attempt at auscultation, something may still be learned ; for during the deep inspirations which interrupt their violent cries, air will enter freely, and from the sounds then heard by the attentive ear it will be easy to estimate the extent and stage of the disease.

It has seldom happened to me to see cases of infantile pneumonia from their commencement. In a few instances, however, when the onset of the disease has been sudden and violent, children have been brought to me within a few hours after the beginning of the attack. In these cases I have been able to confirm the observation of Dr. Stokes, that an intense puerility of respiration in the affected part will be found to be the principal phenomenon. On visiting these patients on the following day after their general symptoms have been greatly ameliorated by depletion and the employment of other reme-

dies, I have no longer heard this intensely puerile respiration, but in its place the mucous or sub-crepitant rhonchus.

"Cases such as those above described form the exception to the rule, and usually children did not come under my notice until the sounds indicative of increased secretion were audible in the lungs. These are either the mucous or sub-crepitant rhonchus or the true pneumonic small crepitation.

"*Mucous rhonchus.*—The mucous rhonchus is heard in most cases where catarrh has preceded the symptoms of pneumonia; it is, moreover, often heard in other cases of lobar pneumonia in the neighbourhood of the sub-crepitant rhonchus which usually occupies the lower and posterior part of the lungs. It is further heard occasionally in situations where the respiration has a distinctly bronchial character, and it very often persists in cases where convalescence has taken place, long after the disappearance of every other sign of pulmonary affection. It would be too much to assert that a portion of lung in which mucous rhonchus is heard may become solid without giving rise previously to any other physical sign, but it is certain, from the statements of MM. Rilliet and Barthez, that this change does sometimes occur so rapidly that bronchial respiration shall be heard to-day in a portion of lung, where on the day previous mucous rhonchus was the only sound the ear could detect. Of the accuracy of this statement I entertain no doubt, though I can confirm it from personal observation only in as far as regards the *extension* of bronchial respiration not with reference to its *actual origin* in a lung. Often, however, I have detected bronchial respiration on one day occupying a very small portion only of one lung, while mucous rhonchus was heard in its neighbourhood, and on the following day much of this rhonchus has vanished and bronchial respiration has become well marked through twice or thrice its former extent. The occasional coexistence of mucous rhonchus with bronchial respiration is doubtless owing to the accumulation of secretions in the larger bronchi; hence when heard under these circumstances it is an accidental phenomenon and one of no value. The mucous rhonchus must be looked on as one of the least important of the physical signs of pneumonia, since it was present in thirteen only of fifty-one children under five years of age, in whom I carefully noted the symptoms furnished by auscultation. Nevertheless, greater value must, as MM. Rilliet and Barthez observe, be attached to it in the child than in the adult, since it is in the former, at least occasionally, the immediate precursor of bronchial respiration, while in the adult it is never the herald of any such grave occurrence.

"*Sub-crepitant rhonchus.*—The sub-crepitant is a sign of far greater importance than the mucous rhonchus, whether we regard the frequency of its occurrence or the consequences which follow it. It was heard in forty-two out of fifty-one cases; in thirty-one of which it either had not been preceded by mucous rhonchus, or if it had that had ceased before the patients came under my notice. In thirteen cases it was associated with true crepitant rhonchus in some other part of the lung, or crepitant rhonchus succeeded it. In fourteen

cases it was followed by bronchial respiration, and in six of these the bronchial respiration succeeded directly to it, without crepitant rhonchus having at any time been audible in those parts of the lung which became hepatized. Unlike the mucous rhonchus, it is not a transitory phenomenon continuing only for a few days, but it is a sign which, after the disease has once become established, persists until either the occurrence of mucous rhonchus in its place indicates that the lung is recovering, or the supervention of crepitant rhonchus or of bronchial respiration makes it evident that the morbid process is advancing unchecked.

Crepitant rhonchus.—In twenty-two cases true crepitant rhonchus was heard, such as distinguishes the pneumonia of the adult. In fourteen cases it had been preceded by sub-crepitant rhonchus or was associated with it. In these instances it occupied a smaller extent of lung than the sub-crepitant rhonchus, and sometimes was confined to one lung while the sub-crepitant rhonchus only was heard in the other. Twice it succeeded directly to mucous rhonchus, and in six cases it was heard unattended either with mucous or sub-crepitant rhonchus. In fourteen instances it was the immediate precursor of bronchial respiration, and was heard in parts of the lung near that in which the bronchial respiration was audible. The sub-crepitant rhonchus is sometimes a sign of the resolution of pneumonia, not so the crepitant, which I heard only when the disease was advancing, never at its decline, and its duration is far shorter than that of the sub-crepitant rhonchus, seldom exceeding two or three days.

"It seems to be agreed on all hands that true pneumonic crepitation is of much less frequent occurrence in children under five years of age, than in the adult. Some writers indeed have gone so far as to deny its existence at this period of life, an opinion which MM. Rilliet and Barthez have shown to be erroneous. It does not, however, admit of doubt that the true crepitant rhonchus is decidedly less common in the child than in the adult, though it may not be easy to assign a satisfactory cause for this difference. Some value must probably be attached to the circumstance that while the frequency of the respiration in children is usually considerably increased under the influence of pneumonia, they no longer inspire so deeply as to fill the smaller air-vesicles, but the power of the respiratory muscles seems to be diminished, and the respiratory movements appear to be increased in frequency in order to compensate for their diminished energy. That some influence must be attributed to this cause is rendered further probable by the fact, that in the pneumonia of old persons, according to MM. Hourmann and Dechambre, a similar absence of crepitant rhonchus is frequent. Another proof of this is afforded by the fact, that in infantile pneumonia sub-crepitant rhonchus will frequently be the only sign perceptible until the child begins to cry, when in the deep inspiration which follows a fit of crying, the air that previously permeated only the larger air-tubes now enters the pulmonary vesicles, and at that moment distinct small pneumonic crepitation will be heard.

Bronchial respiration.—Bronchial respiration was heard in twenty cases, in five of which it was detected in both lungs, in seven it was heard only in the left lung, in eight only in the right. It always existed in the infra-scapular region, though it was not by any means invariably confined to that situation. It sometimes supervened with great rapidity, occupying the whole of the lower half of one lung within twenty-four hours, and occasionally disappearing, as has been observed by Dr. Stokes in the pneumonia of adults with similar rapidity, leaving no trace of its existence but large sub-crepitant rhonchus amounting almost to mucous rhonchus. Usually, however, it came on more gradually, occupying situations where crepitant or sub-crepitant rhonchus had been previously heard, and continued to be audible in cases which eventually terminated favourably for a week or even longer. Sometimes the bronchial respiration was unaccompanied by any other auscultatory sign in the same lung, but in the majority of cases sub-crepitant rhonchus was heard in its neighbourhood, and not unfrequently mucous rhonchus in its very situation. When resolution of the hepatized lung took place, I never heard a return of crepitant rhonchus, but sub-crepitant rhonchus in most cases became audible; in a few instances mucous rhonchus. In either case mucous rhonchus was eventually heard, and it often continued for many days after the lung had in other respects recovered its natural condition; apparently much as in the pneumonia of the adult, a prolonged expiration often persists for a long time after all the other signs of diseased action have disappeared. Bronchial respiration must be regarded as a very grave sign, since in eleven out of twenty cases in which it was heard, the disease had a fatal termination.

Results of percussion.—Though the results of percussion are decidedly less valuable than those of auscultation, yet this mode of investigation is by no means to be passed over as valueless. It is true that the great natural resonance of the chest in the young subject, the circumstance that both lungs are usually affected, and the restless fretfulness of the patient render it less trustworthy than in the adult. Still a difference between the upper and lower part of the chest is generally appreciable long before bronchial respiration becomes audible; when bronchial respiration exists, dulness on percussion can always be detected, and even if it should be necessary to percuss with the utmost gentleness, so as scarcely to elicit a distinct sound, the finger is yet sensible of the presence of solid lung beneath. In cases, however, where the child cries even at the gentlest percussion, I think it better to give up the attempt, rather than by persevering in it to make the little patient dread the presence of his medical attendant, an occurrence which it is of extreme importance to avoid.

[The diseases with which pneumonia may be confounded are Hydrocephalus, Peritonitis, and Dentition.]

Treatment.—I will now endeavour to sum up as briefly as possible what I think I have learned of the treatment of this disease by careful and unprejudiced observation. I do so, however, with great diffidence, for I feel that none but they who have grown gray in the

practice of their profession, and who can preface their remarks by appealing to "lengthened meditation, and to the diligent and faithful observation of many years," are in a position to claim for their opinions on such a subject any consideration. I can only plead my excuse, in the words of Sydenham; if indeed there be not something of presumption in borrowing the expressions of that great man: "Cæterùm quantacunque fuerint aliorum conamina, semper existimavi mihi vitalis auræ usum frustra datum fore, nisi et ipse in hoc stadio versatus, symbolum aliquod, utcunque exiguum, in commune Medicinæ ærarium contribuerem."

Depletion.—The first rank as a curative agent in the treatment of idiopathic pneumonia, I would unhesitatingly assign to depletion. It is true indeed that on this, as on some other points, my experience differs from that of French writers who have studied the disease at the children's hospital at Paris. One of these gentlemen has affirmed that depletion, whether general or local, invariably debilitates the organism, and accelerates the fatal event. True as this assertion may be of pneumonia occurring under the peculiar circumstances which that institution presents, it cannot be extended to it as it is seen in this country. In no case of idiopathic pneumonia which came at an early stage under my notice, have I had occasion to regret the employment of depletion carried so far as sensibly to affect the system. In children of two years old and upwards I have usually resorted to venesection; but in younger subjects have contented myself with the application of leeches. From a child of two years old I have been accustomed to take ℥iv. of blood, and to direct the application of four or six leeches beneath the scapulæ if the symptoms should appear unrelieved after the lapse of a few hours. The effects produced by one bleeding in some of these cases have been most striking; the violent symptoms have sometimes yielded at once, and recovery has gone on uninterruptedly almost without the employment of any other remedy. Of the frequent repetition of bleeding in *these cases*, whether from the arm or by leeches, I have no experience, but my conviction is that children *generally* bear repeated bleedings ill, and I therefore do not practise them. That form of pneumonia which develops itself out of catarrh appears to be least under the control of depletion; no instance having come under my notice in which the attack was cut short by its employment, though here too, local bleeding at the outset is often beneficial.

Tartar emetic.—The tartar emetic is a remedy of great value in the treatment of pneumonia: but I can by no means subscribe to the unqualified recommendation of it by some French physicians in all forms and at all stages of the disease. I would rather say of it what Wolfgang Wedel says of opium, "Sacra vitæ anchora, circumspecte agentibus, Cymba Charontis in manu imperiti." The cases in which it has seemed to me to be of the greatest service were those in which the pneumonia developed itself out of previous catarrhal symptoms, or in which it supervened on measles, or came on in the course of hooping-cough. In such cases, antimony given in doses of a quarter

of a grain to a child of two years old, repeated every ten minutes, till free vomiting is produced, and afterwards continued every two or three hours for forty-eight or sixty hours, has often appeared to be of the most essential service, and the preservation of the patient's life has seemed in several instances to be due to its employment. In pneumonia, too, which has not been preceded by catarrhal symptoms; if after venesection the respiration still continues as hurried as before, and the condition of the patient has been apparently but little improved by that measure, tartar emetic has seemed to be extremely useful. I have been accustomed to give it in large doses, as a quarter of a grain for a child of two years old, and to repeat it every two hours for twenty-four hours, and have observed its use to be followed by a great diminution in the frequency of the respiration, and considerable relief to the distress of the patient; and believe that when given in these cases it paves the way for the advantageous employment of mercury. In no instance, however, in which pneumonia had been neglected, so that the period for depletion was past, and in which distinct bronchial respiration was audible, have I seen beneficial results from the employment of antimony in large doses, as recommended by many French practitioners. It is true that the heat of skin will subside and the respiration will diminish in frequency; thus inducing a treacherous appearance of improvement; but the strength of the patient is seriously impaired by it, the occurrence of a comatose condition, or of what the Germans have called the paralytic stage, will be hastened, and the fatal event accelerated, as I have learned by sad experience in cases where I gave this mode of treatment a full trial. It is not meant, however, that after the supervention of bronchial respiration, antimony ought never to be given, but only that under such circumstances it has appeared to me that it should not be employed except in small doses and in combination with other remedies.

Calomel.—A very high rank as a remedial agent in the treatment of idiopathic pneumonia must be given to calomel. I have been accustomed, after due depletion, to administer calomel in doses of two grains, combined with a quarter of a grain of tartar emetic, and half a grain of Dover's powder, and to repeat it every four hours for children of four years of age; diminishing the antimony after the lapse of twenty-four hours, if distressing sickness were occasioned by it, but persevering in the use of the calomel, provided the patient were not over-purged, until the disease began to yield or the gums showed signs of the mercurial action. The latter occurrence has been by no means frequent, and in no instance have I met with dangerous mercurial affection of the mouth from the employment of calomel in these cases. It has always been my custom to suspend the use of calomel for twelve hours immediately on the first appearance of mercurial affection, and if after the lapse of that time the signs of mercurialization had not increased, to return to its use in smaller doses, and repeated at longer intervals, provided the symptoms of pneumonia were so urgent as to demand its continuance. I have oftener been harassed by the purging which calomel induces, though this may be in a great

degree controlled by combining it with Dover's powder. Besides the inconvenience and danger attending over-purging, calomel has seemed in some instances, especially in infants, to occasion a very harassing nausea and vomiting, which have rendered its discontinuance necessary, lest the patients should suffer from the want of sufficient nutriment. In such cases I have had recourse to mercurial inunction, and under its employment recovery has taken place even where circumstances had seemed to warrant none but a most unfavourable prognosis. It is especially in cases of neglected pneumonia, where the time for depletion has long gone by, where the administration of antimony is evidently contra-indicated by the exhausted state of the patient, and where the existence of diarrhœa forbids the employment of calomel, that the full value of this remedial agent is seen. I have employed it in the proportion of ʒj. rubbed into the thighs or axillæ every four hours, in children of four years of age. I have never observed salivation induced by it, but have seen the symptoms gradually diminish in severity during its employment, and the solid lung become once more permeable to air.

Stimulants.—Usually, when the employment of mercurial inunction is indicated, the time for all directly-depressing measures has long passed, and the best means of supporting the patient's strength become matter for serious consideration. No point in the treatment of the disease is more difficult than that of seizing the exact moment when the employment of stimulants becomes necessary, and no general rule for regulating their use can be laid down. It has, however, appeared to me to be seldom safe to withhold them when extensive bronchial respiration exists in a case on its first coming under the care of the practitioner, or when it has supervened in spite of active antiphlogistic treatment. If the patient, too, is beginning to be much purged; if the respiration is becoming more laboured and irregular, though diminished in frequency; and if the pulse is becoming more frequent and above all smaller and smaller, it is high time to resort to their use. Wine is as indispensable in such cases in the pneumonia of children as in that of the adult, and it may be necessary to give it even to infants at the breast. Ammonia may also be advantageously administered in this stage of the disease, either in a mixture with the decoction of senega, or dissolved in milk, which conceals its disagreeable pungency better than any other vehicle. If diarrhœa does not exist, strong beef-tea or veal-broth is the best form in which nutriment can be given; but if the bowels are relaxed, arrow-root, or the *decoction blanche** of the French hospitals should be substituted for it.

Blisters.—Blisters would probably be employed about this time in the treatment of pnumonia in the adult, but I cannot recommend their application in children. One objection to them arises from the time

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* This, which is similar to the white decoction of Sydenham, is prepared by boiling half an ounce of hartshorn shavings, and the inside of a roll, in three pints of water, till reduced to a quart.

which elapses before they rise sufficiently, during the greater part of which they inflict considerable pain on the little patient, and make him extremely restless. The sores they produce when they cause vesication are sometimes very dangerous; they may even become gangrenous, and occasion the patient's death. Even if no such unfavourable results follow, they are nevertheless a source of constant annoyance to the child, at first from their soreness, afterwards from the troublesome itching which is felt when they begin to get well. Some pain is unavoidably produced whenever the dressings are changed, and the frequent repetition of this painful process sometimes makes the child take a dislike to its attendants, who seem to it to be the causes of so much suffering. It becomes suspicious of every one and quite unmanageable, while nothing is of greater moment than that a sick child should retain its fondness for its attendants during the whole period of its illness.

Mustard-poultices.—It is quite possible that some of these objections may be obviated among the children of the wealthy by that care and those comforts which riches can always command, but I have been led, by the reasons above stated, to discontinue the employment of blisters in the treatment of pneumonia among the children of the poor. The same objections do not apply to the employment of mustard-poultices, and in many instances they have seemed to be productive of great good. They produce a much more speedy effect than blisters, and may be applied with safety over a much larger surface, hence they are often of signal benefit in relieving sudden accessions of dyspnœa; while from their not occasioning any breach of surface they may be reapplied as often as the emergencies of any case require.

Of the subsidiary medicinal agents, such as ipecacuanha and the class of expectorants, nothing need be said; but there are one or two points in the general management of the disease not altogether unworthy of notice.

General management.—It is desirable, in all cases of pneumonia at all severe, that infants should be taken from the breast, and that the mother's milk should for a time be given them from a spoon. This is of importance on two accounts; partly because the thirst they experience induces them to suck overmuch (hence it is well that barley-water or some other diluent be given to them frequently instead of the milk, in order that they may quench their thirst without overloading their stomach); partly, because the act of sucking is in itself mischievous, since, as must at once be perceived, it taxes the respiratory functions to the utmost.

A second important point is never to allow the children to lie flat in bed or in the nurse's arms, but to place them in a semi-recumbent posture in the arms, or propped up in bed. By so doing respiration is facilitated, since the diaphragm is relieved from the pressure of the abdominal viscera, and that stasis of the fluids in the posterior parts of the lungs is prevented, which has been shown by French writers to be so prejudicial to infants or children labouring under pneumonia.

The only other point to which I will allude is, that when pneumonia has reached an advanced stage, or has involved a considerable extent of the lungs, the children should be moved only with the greatest care and gentleness, lest convulsions should be brought on. Whatever may be the explanation of this occurrence, the danger is by no means an imaginary one, for I have seen instances in which children have been seized with convulsions immediately on being lifted somewhat hastily from bed and placed in a sitting posture; and on this account I have referred to what might seem to be a trivial matter.

[We have extracted nearly the entire of this admirable essay on the Pneumonia of Children from the *British and Foreign Medical Review* because we think it one of the best monographs we have read on the subject].

Case of Popliteal Aneurism cured by Compression of the Femoral Artery, by Edward Hutton, M. D., Surgeon to the Richmond Hospital.—Michael Duncan, æt. 30, a labourer of rather healthy appearance, but of intemperate habits, was admitted into the Richmond Hospital on the 3rd of October, 1842. He stated, that ten days previously, whilst suffering from cramp in the right leg, to which he had been subject for the last year, he, for the first time, discovered a tumour in his right ham, which was then equal in size to a hen's egg; in three days afterwards he observed some swelling in the foot and ancle, and felt pain along the outside of the leg. At the time of his admission into hospital the tumour had somewhat increased in size, and was found to occupy the lower part of the popliteal space. It pulsated strongly, and when the femoral artery was compressed in the groin the tumour admitted of considerable collapse. The compression being removed, it again became distended, and the "purring thrill" attended the re-entrance of the blood into the aneurismal sac. The leg was somewat swollen and its veins turgid, and he complained of prickling sensations in the limb. His pulse was 60 and regular, and his general health appeared to be unaffected. The nature of his case was explained to him and the operation of tying the femoral artery proposed. To this he declined to submit in the first instance, and expressed a desire that other means might be tried. For three or four weeks he maintained the horizontal posture, and a compress and bandage were applied; but as the tumour gradually increased in size, and as he suffered pain from the pressure, this treatment was discontinued.

November 1st. The patient being still reluctant to undergo the operation, I resolved to try compression of the femoral artery, and I entertained some hope of success from being informed by Mr. Adams that the late Mr. Todd had succeeded in a similar case, of which no account has been published. Having at hand an instrument constructed for the suppression of secondary hæmorrhage after ligature of the femoral artery, I applied it in this case. It was so contrived as to admit of pressure being made by a screw and pad upon the course of the femoral artery, and the counter-pressure upon the

opposite surface of the limb without interfering with the collateral circulation.

In the first instance the compression was made upon the femoral artery in the middle third of the thigh, and although it was effectual in compressing this vessel it produced so much uneasiness that it could not be sustained, and after a few applications the apparatus was removed and adapted to the upper part of the limb.

November 12th. The femoral artery was compressed as it passes from the pelvis under Poupart's ligament, and the pressure maintained for more than four hours.

14th. The tumour feels rather more solid; the purring thrill before felt on the re-entrance of the blood into the sac is no longer sensible; the pulsation as before.

18th. No change in the tumour.

19th. The circumference of the limb at the seat of the tumour is a quarter of an inch less than at the last measurement.

22nd. Duration of compression three hours, the pulsation returned after its removal.

24th. Artery compressed six hours, same result.

25th. He was unable to bear the application from soreness in the groin, he complained also of some pain in the tumour.

26th. The compression was resumed, and continued for four hours; when the instrument was removed, the pulsation had ceased in the tumour, which felt solid, and was free from pain.

27th. The pulsation had, in a slight degree, returned; compression applied for six hours.

28th. No pulsation was now felt in the tumour. It had decreased in size, and was solid.

29th. The compression was maintained six hours; no pulsation can be felt; compression applied for three hours.

December 1st. An artery, about the size of the temporal, is felt pulsating along the surface of the tumour, which is quite solid, much diminished in size, and is altogether free from pulsation. The use of the instrument was now discontinued. The femoral artery pulsates naturally.

On the 7th of December the temperature of the legs was examined at the calf.

Temperature of the aneurismal limb, 86° Fahrenheit; of sound limb, 90°.

	Aneur.	Sound limb.
Dec. 12th.—Temperature, .	88°.	90°.
,, 20th. ,, ,, .	90°.	91°.
,, 21st. ,, ,, .	91°.	91°.

On the 27th of December the tumour was reduced to the size of a small walnut, and felt very hard. He was this day discharged, at his own request.

In six weeks he visited the Hospital, at my request. The tumour was about the size of a nutmeg, and solid. He had been at his usual employment.

Remarks.—Since this case occurred, Dr. Cusack has treated with

success, by similar means, a case of popliteal aneurism in Dr. Stevens' Hospital, and Dr. Bellingham another in St. Vincent's Hospital. It would appear that this plan of treatment has been too hastily abandoned by the Profession, probably from the compression employed being so excessive as to render it quite insupportable to the patient. The least possible pressure which may be sufficient to close the vessel should be used, and when this cannot be sustained, it will prove of use to partially compress the artery, so as to lessen the impulse of the circulation. In cases where the aneurismal diathesis exists, this treatment would seem to be demanded before recourse should be had to an operation.

We are happy to be able to add Mr. Cusack's case.

Case of Popliteal Aneurism cured by Pressure, by Mr. Cusack.—John Lynch, æt. 55, a tanner, of short, stout build, admitted into Stevens' Hospital, No. 4 ward, January 17, 1843, under Mr. Cusack. Last autumn he had a bad fever, from which he recovered slowly; about five weeks since, he began to experience burning pains running from the knee down to the ankle, particularly along the outer and anterior part of the leg; these continued until seven days before admission, when, as he was walking in the street, he suddenly felt a very acute pain in the ham, running to the ankle, and compelling him to sit down; he put his hand to the part, and, for the first time, felt a lump there the size of his fist; he got home with some difficulty, but the pain gradually decreased, and next day he went about his business as usual; during the following days the lump became much smaller, so that, on admission, it was not more than half its original size.

He has been in the habit of carrying heavy burdens up a ladder; has had cough and palpitation of the heart since the fever; used to drink freely, but has lived temperately for the last twenty years; never used mercury.

On examination, there is a tumour in the lower angle of the left ham in the course of the popliteal artery, about the size of a hen's egg; it is elastic and pulsates synchronously with, but more powerfully than, the heart; the pulsations are as evident latterly as on the superficial surface; moderate pressure on the femoral artery stops them, and empties the tumour, so that it can scarcely be felt; the skin is not discoloured, nor is the tumour tender on pressure, except at a point on each side, the size of the top of the finger; it is smooth and even on the surface, and a distinct bruit can be heard when the ear is applied to it; the anterior and posterior tibial arteries cannot be felt in either feet; what vessels can be felt, appear to be large and to have thin coats; no morbid sound can be detected in the heart, but its impulse is weak, and the pulsations very intermittent and irregular; the pulse at present is 70, small and irregular, but it varies from 60 to 90, without any apparent cause; the left lung is emphysematous; the superficial veins of his cheeks are much enlarged, giving a dusky red appearance; temperature of both limbs the same.

Jan. 22nd. A roller was applied lightly from the toes up to the groin.

Habeat tinct. digitalis gtts. v. ter in die.

Feb. 4th. No apparent difference; if the bandage is not very carefully applied, it gives him severe pain in the instep after ten or twelve hours; to-day a compress was laid over the tumour, and the bandage put on as before.

Tinc. digitalis gtts. x. ter in die.

Feb. 22nd. No change in the tumour. Mr. Hutton came to day, and applied his instrument; the pad being screwed down on the femoral artery at as high a point as possible, and with force sufficient to stop completely the pulsations in the tumour; a compress was then laid over the aneurism, and secured by a flannel bandage, beginning at the toes; he soon began to feel uneasy, but when it had been on for one hour and a half, his face became pale, his pulse weak and slow, and he complained of faintness, with a feeling of weight in the situation of the pad, running up to his heart, and the sensation of a rush of blood to the head, accompanied by profuse perspiration on the forehead and vertex; the instrument was now loosened, and he soon rallied; when quite recovered, the pad was again screwed down, but he could not bear it for more than half an hour at a time.

Cont. tinct. digitalis gtts. x. t. d.

February 24th. He bears the instrument as long as he can, and then loosens it, screwing it down as soon as he is free from pain; he complains most of the rush to his head; the pad slips off the artery very easily; he says he can tell by a peculiar sensation of something running up from the situation of the pad, when the pulsations in the tumour are stopped, but he often gives an erroneous opinion; to-day the instrument was put on loosely, so as only to lessen the force of the pulsations.

Cont. tinct. digitalis gtts. x. t. d.

February 27th. He has been very patient and quiet, but no effect has been produced on the aneurism. Mr. Hutton's instrument was left off, and a bandage applied. Temperature of both legs the same throughout.

Cont. tinct. digitalis gtts. x. t. d.

March 4th. Same as at last report.

Tinct. digitalis gtts. xv. ter die.

March 16th. Sir P. Crampton's instrument, modified by Mr. Daly, was put on, so as merely to lessen the impulse in the aneurism; no compress or bandage was put on the tumour. Pulse 63, very intermittent; it soon rose to 90.

Cont. tinct. digitalis, gtts. xv. ter die.

March 18th. He bears this instrument much better than the other; has none of that unpleasant rush to the head; complains chiefly of soreness produced by the pressure of the pad; this is relieved by dusting the part with flour. No change in the tumour.

Omitte tinct. digitalis.

March 22nd. The tumour is decidedly harder and smaller, the impulse being greatly lessened; at times there is only a thrill in the aneurism; sometimes there is no motion whatever in the tumour, even when the pressure is removed, but it returns on the slightest movement of the body; he observes that the two spots before mentioned have lost all tenderness on pressure. Complains of cough. Pulse 67, very irregular.

Mist. expect. c. tinct. opii camph.

March 23rd. Pulsation has totally ceased; the tumour is very hard, and about the size of a large walnut; a large artery can be felt running down superficial to the aneurism, over which it can be easily rolled with the finger; it then divides into two branches; the articular vessels do not appear to be enlarged.

On the 19th he had some œdema of the leg, for which a bandage was put on the limb; for the last two nights he has had a most intolerable itching in the thigh, but there is no redness or mark of any kind.

March 25th. Instrument was removed to-day. The femoral artery can be distinctly traced as far as the opening in the tendons of the triceps and vastus int.

Mist. expect. c. Aq. lauro cerasi.

April 1st. The tumour is decreasing; the enlarged artery above mentioned is much smaller than at last report; the relative temperature of the limbs, as ascertained by thermometer, has not varied.

April 7th. Tumour continues to decrease; the entire artery can be traced until it enters the aneurism, but in the lower third of the thigh and in the ham, the pulsation is so weak that it can only be felt on a careful examination.

Cont. mist. expect.

April 14th. Tumour can now be grasped with facility; the enlarged artery has become very small, while the popliteal of the affected limb now pulsates as strongly as that of the sound one; a number of hard cords can be felt passing over the tumour. The palpitations of the heart still continue. Pulse 68, intermittent.

Opium and Indian Hemp.—Opium is our most valued agent in the treatment of disease, and so freely has it been used, and so largely have its therapeutic powers been made available by the medical practitioner, that it may be thought impossible to discover another ailment in which it may be found of service. Nevertheless, several medical journals at home and on the continent have recently contained papers, and details of cases of strangulated hernia, which resisted the usual measures, including the taxis, but were readily reduced when the internal administration of opium or morphia had been had recourse to, and the sufferer was brought fully under its influence; large doses of the anodyne were required. Mr. Lyell, of Newburgh, says, the rule should be to employ the morphia in half grain hourly or half hourly doses, until the patient is fairly narcotised. He gave his patient three

grains of opium, and four and a half grains of the muriate of morphia, before he was able to reduce the rupture, and he ascertained by direct experiment that the drug he employed was really good. A similar result followed the use of belladonna injections in the hands of Dr. F. Fischer of Tambach. His cases, two in number, are recorded in *Schmidt's Jahrbucher.* In one instance, symptoms of narcotism were induced. Dr. Vigier, a physician at Amfreville, speaks of a case of strangulated inguinal hernia of the right side, in which failing reduction by manipulations, he employed ether irrigations, with the effect of lessening the pain and swelling, and inducing sleep. A second application a few hours afterwards acted again as an anodyne, and when the patient awoke, the rupture was reduced. Dr. Vigier states, that he did not have recourse to the taxis, after he had tried the ether, of which about 40 scruples were used altogether.

From the increase of intercourse between European medical men and the inhabitants of the Celestial Empire, we have been enabled to gather much interesting information with respect to the effects produced by the baneful practice of opium smoking, which appears to be almost wholly confined to the male sex. Mr. Smith states, that in Penang the opium smokers are the Chinese, the Malays, and a few of other nations, chiefly the native Portuguese. It is calculated that 10 per cent. of the Chinese, two and a half of the Malays, and about one per cent. of other natives are addicted to this vice. The drug is not used as imported, but is subjected, first to a process of solution in soft water, then of evaporation, re-solution, and re-evaporation, to free it from impurities. The watery extract thus prepared is called chandoo, and is twice the strength of crude opium. The dregs of the chandoo when smoked, are collected and made into pills for the poorer classes; these are called tye-chandoo. The Benares opium is chiefly used, but the Patna is preferred, because it has a finer flavour, is stronger, and its effects are more lasting. The smoker, when he commences his daily dose, is at first rendered loquacious and animated, but as the opium takes effect, the conversation drops, and is succeeded by repeated bursts of loud laughter; the next phase presents a vacancy of countenance, with pallor and shrinking of the features, followed by deep sleep, lasting from half an hour to three or four. In this state the pulse is slower, softer, and smaller than before the debauch. The effects of this poison on the system are very severe, and it appears that the habit once fixed, is very rarely overcome—loss of the mental faculties, lassitude, and early impotence are produced by it. If habitual smokers are totally and suddenly deprived of their accustomed stimulus, death speedily follows in the train of a series of horrible symptoms. The only mode to avoid a fatal result, and break the chain of diseased habit, appears to be the use, in gradually diminishing doses, of a tincture made of tye-chandoo with rice spirit. This preparation is only one-fourth the strength of the chandoo. Dr. M'Pherson, in his recent work on China, gives a nearly similar account of this habit. In the Montana district, in Peru, a practice prevails, which is thus described by Dr. Smith:—It bears some re-

semblance to the vice of which I have just spoken, but it is not so pernicious. The coca leaf, when moderately used, comforts the stomach of the Indian, as good tea does that of the European, and acts in a peculiarly cordial manner. It enables those who use it in moderation, to endure a great deal of cold, wet, general fatigue, and even fasting, to a surprising degree, with apparent impunity. But though it in this way fortifies and supports nervous and muscular energy, and keeps up an agreeable exhilaration of spirits, when taken in excess, as is done by many of the coca-gatherers, who repair to the Montana to indulge in it freely, it is said to excite a species of reverie, which may be looked upon as a variety of mania. Those who are thus affected are always chewing the leaves, and retire to the solitude of the thicket, finding their joy in flying from the presence of their fellow-men, and indulging in silent contemplation, or rather in vague associations and trains of ideas, without exercising any rational control of thought, or feeling an interest in the ordinary concerns and duties of life. The remedy for this state is simply to return into society, and abandon the abuse of the coca leaf.

While thus calling attention to the effects of anodynes, it may be as well to mention that Mr. Ley has found the resinous extract of the Indian hemp a very powerful remedy in allaying muscular spasm and irritation. He gave it in doses of from one to three grains. Dr. O'Shaughnessy calls it an anti-convulsive remedy of the greatest value. Mr. Ley has found it, in full doses, produce a singular sensation of terror or fright, instead of the pleasant feeling of inebriation, of the most cheerful kind, described by authors.

The Indian hemp (*Cannabis Indica*) appears to be identical, in all respects, with the European variety (*Cannabis Sativa*), with the single exception, that the former plant contains a certain amount of resin, on which its narcotic and anti-convulsive powers depend, and which seems to be almost totally absent in the European plant. Mr. Ley stated at a recent meeting of the Royal Medico-Botanical Society, that he had collected some in the Regent's Park, and had obtained from it a tincture, and an alcoholic extract; but found it contained only about one-tenth the quantity of resin yielded by the Indian plant, and, as he expected, he had found it comparatively inert. The hemp in question was gathered very late in the season, and was perhaps too old. The resin of the hemp is soluble in alcohol and ether, partially soluble in alcaline, insoluble in acid solutions; when pure, of a blackish grey colour—hard at 90 deg.,—softens at higher temperatures, and fuses readily—soluble in the fixed, and in several volatile oils. Its odour is fragrant and narcotic, taste slightly warm, bitterish, and acrid. The Indian plant exhales a powerful narcotic odour, and the branches are glutinous to the touch with the resinous secretion, which is collected when the seed is formed (as the plant is then in its greatest perfection), and is sold under the name of *churus*, or the shoots from which the resin has *not* been collected, are cut, dried, and sold as *gunjah*. The churus is in general use as an intoxicating agent, from the furthermost confines of India to Algiers. If it be swallowed,

almost invariably its inebriation is of the most cheerful kind, causing the persons to sing and dance, to eat food with great relish, and to seek aphrodisiac enjoyment. The intoxication lasts about three hours, when sleep follows. No nausea, nor sickness of the stomach supervenes, nor are the bowels at all affected: next day, there is slight giddiness, and much vascularity of the eyes, but no other symptom worth recording. Dr. O'Shaughnessy stated, with regard to the character of the intoxication produced by the churus, that apathy, or insouciance, was as often present as the feelings of pleasurable excitement; but he could not recollect a single instance in which that of alarm or terror had been occasioned by it. The effects of the resin are much modified in this country, and much less marked, possibly from the length of the voyage rendering the article deteriorated in value. The resinous extract prepared at Calcutta from the fresh plant, is the most valuable of all the preparations: next to that ranks the extract made from the gunjah immediately after it has been brought to this country, while a similar preparation made from the plant after it has been a length of time in England, is comparatively inert. From this circumstance we may conclude, that some portion of the virtues of hemp depends on the essential oil it contains. Dr. O'Shaughnessy says, that the gunjah yields to alcohol twenty per cent. of resinous extract, composed of the resin (*churus*), and green colouring matter (*chlorophylle*). Distilled with a large quantity of water or spirit, traces of essential oil pass over, and the distilled liquor has the powerful narcotic odour of the plant.

Mr. Ley, in his essay, read before the Royal Medico-Botanical Society, draws a comparison between the effects produced by opium and those caused by the cannabis indica, the result of which induces him to give the preference to the latter, its influence being exerted more kindly and gratefully on the system. It has proved of service in cholera and rheumatism, but it is in spasmodic and convulsive diseases that it is most eminently useful. In tetanus it has been the means of cure in the majority of cases, and it has relieved much of the severity in hydrophobia, although it did not prevent the fatal termination. It is useful in chorea, spasmodic asthma, and delirium tremens, and generally wherever opium is indicated. In India it has produced catalepsy. Mr. Ley considers further, that it will prove a direct antidote, the first of its class, to the strynchia poisons, in which opinion he is confirmed by Dr. O'Shaughnessy, who experimented with it on dogs. Having ascertained by direct experiment the poisonous dose of the nux vomica bark on animals, he administered it to six dogs, following it in half an hour with a full dose of the resin. The dogs who did not get the resin died with all the symptoms characteristic of poisoning by nux vomica, and the others all escaped. Dr. O'Shaughnessy observes further, that a blister to the nape of the neck, leeches to the temple, and nauseating doses of tartar emetic, with saline purgatives, have rapidly dispelled the symptoms of an over-dose of the drug. Makrizi recommends oxymel and acids as its

antidotes, and next to these, emetics, cold bathing, and sleep.—*John Foote, Esq. Med. Times.*

On Electro-puncture in the Treatment of Deafness, depending on a Paralysis of the Acoustic Nerve, by M. Jobert.—The paralysis of the acoustic nerve may be produced by exposure to a current of air, to too great a shock of the head, to waves of sound too violent, to affections of the teeth or of the gums. Electro-puncture has been already employed in these cases, but it had fallen into disrepute. The author believes that he uses it in a manner more direct and more rational; here is his proceeding:—Stard's sound, he says, is introduced through the nasal fossa into the eustachian tube, and in this sound a long thin acupuncture needle is inserted, so as to fix itself in a point of the parietes of the eustachian tube, while the other end projects from the end of the sound; another acupuncture needle is implanted in the membrane of the tympanum. This being done, one of the conducting wires of a galvanic battery, of which the trough is filled with water and muriatic acid, is passed through the eye of one of the needles, and the end of the other conducting wire is made to touch the opposite needle. I have used, in the beginning, eight pairs of the battery, then I got to ten, to twelve pairs; finally I have been as high as eighteen, and at present I have patients who have undergone several sittings, and on whom I have acted with the entire pile, the trough of which contains forty metallic pairs. At the moment that the two poles are put into contact, there is a very painful shock in the ear and in the head, with convulsive motions; but this shock and this pain cease immediately. In a single patient the impression was felt during eight days, but it never extended beyond a slight pain, which ceased of itself. It must be added, that the patients who were submitted to electricity in this manner, were, during some moments, as if stunned, and preserved some time after the experiment a bewildered look. The sitting was usually confined to a single shock when the patients were irritable; I have given two and even three shocks in people whose sensibility was obtuse, and who have been already submitted to electro-puncture. In general I allow eight days to pass between each trial. The author then relates four cases of well marked deafness, and in which the cure was complete; in the first after a single shock, in the second after two shocks, and in the third after two sittings, each composed of three galvanic shocks.—*L'Examinateur Medicale.*

On the Special Functions of the Skin, by R. Willis, M. D.—The purpose which is answered in the animal economy by the function of the skin has not yet been precisely indicated by physiologists. It is universally acknowledged of immense importance to the health; but no one has said how or wherefore it is so. The chemical analysis of the sweat is acknowledged to throw no light on the ends for which it exists; and the principal matter excreted from the skin is water; sweat contains about 99 per cent. of this fluid. The author of this paper considers the water as the essential excretion; not, however,

in the usual sense in which the word excretion is used, nor yet as a means of regulating or reducing temperature. In the means which nature takes to preserve the lower animals from the effects of loss of heat by sending them into the world ready clothed, and in the uniformity with which man contrives to clothe himself over so large a portion of the earth's surface, he sees that the object is generally to economise heat, not to dissipate it. He says there is even something like an absurdity involved in the invocation of a system to cool the body, seeing that one great business of life, in all the temperate and cold countries of the world, is to guard against the loss of heat. Heat is lost, indeed, to a great extent, in converting the product of the sudoriparous glands into vapour; but the loss here was unavoidable; it is not the end. In spite of all the sudoriparous glands can do, also, the experiments of Delaroche and Berger have shown that the heat of the body rises considerably above the standard, when exposed to temperatures somewhat higher than itself. In chambers heated to 120° and 130° Fahr. the temperature of animals rises, within an hour, to from 11° to 16° above what it had been before, and life is destroyed. And then the suppression of the cutaneous exhalation is by no means followed by a rise in the temperature of the body. In general dropsies, which are attended with a remarkable diminution of this secretion, an icy coldness usually pervades both the body and the limbs. A great fall in the animal temperature was likewise found by Fourcault and Becquerel and Breschet to be the effect of covering the body with a varnish impervious to perspiration; and so serious was the general disturbance of the functions in these circumstanees, that death sometimes ensued in the course of from three to four hours. Delaroche and Berger had also found that confinement in an atmosphere of no higher temperature than the body of an animal, but saturated with moisture, was rapidly fatal; animals scarcely resisted such an atmosphere for an hour before they were reduced to extremity. Whatever prevents the skin from performing its function, i.e. from throwing off a little water, is very speedily fatal.

How may this effect be produced? How does it happen that health and even life can be so immediately dependent, as they certainly are, on the elimination of some thirty-three ounces from the general surface of the body in the course of the twenty-four hours? To this the author answers—by securing the conditions which are necessary for the endosmotic transference between arteries and veins of the fluids that minister to nutrition and vital endowment.

It is admitted by physiologists that the blood, while still contained within its conducting channels, is inert with reference to the body, no particle of which it can either nourish or vivify, until that portion of it which has been denominated the *plasma* has transuded from the vessels and come into immediate contact with the particle that is to be nourished and vivified; but no physiologist has yet pointed out the efficient cause of these tendencies of the plasma, first, to transude through the wall of its efferent vessels, and secondly, to find its way back again into the afferent conduits. The explanation given by the

author is, that, in consequence of the out-going current of blood circulating over the entire superficies of the body perpetually losing a quantity of water by the action of the sudoriparous glands, the blood in the returning channels has thereby become more dense and inspissated, and is brought into the condition for absorbing, by endosmosis, the fluid perpetually exuding from the arteries, which are constantly kept on the stretch by the injecting force of the heart.

Repeated experiment has demonstrated the fact that the blood in the veins is of somewhat greater density than that in the arteries. If the specific gravity of arterial blood be allowed to be 1,050, that of venous blood in the mean will be 1,503.

In an appendix to the paper, the author points out a few of the practical applications of which the above-mentioned theory is susceptible. Interference with the function of the skin, and principally through the agency of cold, he observes, is the admitted cause of the greater number of acute diseases to which mankind, in the temperate regions of the globe, are subject. He who is said to have suffered a chill, has, in fact, suffered a derangement or suppression of the secreting action of his skin, a process which is altogether indispensable to the continuance of life; and a disturbance of the general health follows as a necessary consequence. Animals exposed to the continued action of a hot dry atmosphere die from exhaustion; but when subjected to the effects of a moist atmosphere of a temperature not higher than their own, they perish by the same cause as those which die from covering the body with an impervious glaze; for, in both cases, the conditions required for the access of oxidized, and the removal of deoxidized plasma, are wanting, and life necessarily ceases. The atmosphere of unhealthy tropical climates differs but little from the vapour-bath at a temperature of between 80° and 90° Fahr.; and the dew point in those countries, as for example on the western coast of Africa, never ranges lower than three or four degrees, nay, is sometimes only a single degree, below the temperature of the air. Placed in an atmosphere so nearly saturated with water, and of such a temperature, man is on the verge of conditions that are incompatible with his existence; conditions which may easily be induced by exposure to fatigue, to the burning sun, or other causes which excite the skin while the circumstances necessary to the exercise of its natural function are wanting. The terms *Miasma* and *Malaria* may, according to the author, be regarded as almost synonymous with air at the temperature of from 75° to 85° Fahr., and nearly saturated with moisture.

The secretion of the skin otherwise suppressed is attended with no less fatal consequences. What kills a patient within the first forty-eight hours of a bad attack of scarlet fever? The autopsy shows nothing amiss. He dies undoubtedly from the complete suppression of the function of the skin. Restore this, and he will do well; all the stimulants in the world will not rouse him if the function of his skin be not restored.—*Proceedings of the Royal Society*, March 2nd and 9th.—*Medical Gazette.*

On the Preparation of Muriatic Acid, by Heumann.—The preparation of pure muriatic acid is one of the easiest operations, provided that we follow Gregory,* and employ one atom by weight of chloride of sodium, and two of sulphuric acid. The latter must be diluted with water enough to bring down the specific gravity to 1.6, for which purpose from nine to twelve ounces of water will be required to $2\frac{1}{2}$lbs. of fuming Nordhausen acid. This proportion was recommended by Dr. Wittstein† as the best for effecting the entire decomposition of the chloride of sodium. Moreover, the salt must be perfectly free from iron, and the sulphuric acid from arsenic.

A common glass alembic serves as the vessel for the development of the muriatic acid gas, and a glass tube, twice bent at right angles, conducts it into a receiver containing pure water, which must constantly be kept as cold as possible. By a proper management of the fire, the development and absorption of the muriatic acid gas go on easily and uninterruptedly.

The muriatic acid thus obtained varies in specific gravity according to the quantity of water employed. It is perfectly colourless, and is free from sulphuric acid, from sulphurous acid, from chlorine, iron, and arsenic.

All sulphuric acid employed in pharmacy must necessarily be tested for arsenic, as there is English sulphuric acid now in the market which abounds in this pernicious contamination. I lately examined an acid of this kind from a manufactory on the Rhine, which, when tested with sulphuretted hydrogen gas, afforded 0.7 of a grain of sulphuretted arsenic in an ounce, equal to 0.42622 of a grain of arsenic. If an acid of this kind is employed, the whole quantity of arsenic is found in the muriatic acid, not a trace of it being discoverable in the bisulphate of soda which remains.

This is the source of the arsenic so frequently found in the muriatic acid of commerce, which renders it totally unfit for pharmaceutical use. The method of detecting arsenic in muriatic acid is well known.—*Buchner's Repertorium—Annals of Chemistry.*

The Ferruginated Pill of Mercury, by Dr. Collier.—The varying and unsatisfactory quality of our "blue pill" has for many years atracted attention. In my second edition of the London Pharmacopœia I gave the outline of a formula for preparing it with sesquioxide of iron; the further experience of years enables me to offer this preparation as a boon to the profession and to the public, for it may be proved that the iron enters along with the mercury into the blood, and saves the wear and tear of the human body under its use

s will not at this time canvass, because I doubt, the probability of the t esquioxide (in double equivalents) yielding up one atom of its oxygen o the mercury, as is the opinion of several chemists to whom I have submitted this compound. I am aware that other peroxides, when

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* See Liebig's Annals of Pharmacy and Chemistry, vol. xli.

† Buchner's Repert. Band xiii.

moist, will similarly combine and divide mercurial globules; and I will not now enter upon the series of incomplete experiments instituted by myself to prove that mercury will amalgamate with other metallic oxides, and in this state form double or triple salts with acids. I shall now keep only to the practical utility of my compound, and to its importance as a great remedial improvement.

The following is the formula:

℞ Ferri sesquioxydi, ʒi.
Hydrargyri, ʒii.
Confect: Rosæ Gallicæ, ʒiii.

Contere donec globuli non amplius conspiciantur.

It is made in five minutes; common blue-pill demands a week. The globules are not visible, even by the microscope. It is uniform in its appearance and effects. It makes a smoother pill, retaining its form more permanently. It salivates in a few days in the usual doses. It is particularly eligible for the strumous, the irritable, and for reduced anemial constitutions requiring mercury. The powers of life are not so much (scarcely at all) prostrated under its use. Its resolvent power is greater than that of mercury alone, especially with respect to buboes. Practitioners will at all events know what they are using; at present they have for blue-pill all manner of alloys and sulphurets—mercurial zinc pill, mercurial-sulphur pill, &c. &c.

Five grains of the sesquioxide will suffice to amalgamate and divide a large quantity of mercury, but I propose the larger proportion as a remedy.—*Lancet*, March 11th, 1843, page 880.

[The facility with which mercury may be reduced to a state of minute division by means of vegeteble extracts, has already been pointed out in this Journal, vol. i., page 203, the time required for this purpose varying from ten minutes to half an hour, according to the nature of the extract employed. The therapeutic value of Dr. Collier's preparation, as detailed in the above paper, entitles it to the consideration of the profession, as a new remedy, but we cannot recommend the use of any succedaneum in the preparation of the blue-pill of the Pharmacopœia. A strict adherence to the order of the College produces a result uniform in strength and appearance.—Ed. Pharm. Journal].—*Pharmaceutical Journal.*

Medical Benevolent Fund Society of Ireland.—Our attention has been directed to this excellent Institution by a circular lately received from the secretary, in which its claims on the profession are well set forth. We have pleasure in giving publicity to this letter, and we avail ourselves of the opportunity to notice the history and constitution of the society, for the information of such of our readers as may not yet be acquainted with it.

The Society was established on the 26th of May, 1842, at a Meeting of Physicians and Surgeons, held in the Royal College of Surgeons for that purpose. Dr. Kingsley of Roscrea, with indefatigable zeal and true Christian benevolence, had succeeded in

creating a good deal of interest in the minds of his professional brethren with respect to the destitute condition to which the widows and orphans of medical men are sometimes reduced; and availing himself of the presence, in Dublin, of several provincial practitioners, who came to the Annual Meeting of the Medical Association of Ireland, he procured a highly respectable attendance of city and country members of the faculty, who at once heartily entered into his views, adopted his resolutions, and formed the Society which he so ardently wished to establish.

The following rules were then and there unanimously agreed on for the regulation of the Society until the next Annual Meeting in May, 1843, Sir Henry Marsh, Bart., in the Chair, viz.:

1. That a charitable fund be created by donations and subscriptions of physicians and surgeons, to be called the Medical Benevolent Fund of Ireland.

2. That contributions be received from all persons friendly to the objects of the Society, though not belonging to the profession.

3. That the object of the fund be the relief of medical men under severe and urgent distress, occasioned by sickness, accident, or any other calamity.

4. That any medical man labouring under such afflictions be considered a fit object for the charity.

5. That the claims of contributors shall, as far as possible, have the preference; but that contributions to the fund give no claim of right to relief, the fund being one of pure charity, and that each case be judged according to the urgency of the distress.

6. That under circumstances of peculiar emergency, relief may be extended to the widows and orphans of medical men, it being understood that it is not the design of this fund to relieve medical men from the necessity of providing for their families by ordinary life insurances, and such other means as prudence dictates.

"But if any provide not for his own, and specially for those of his own house, he is worse than an Infidel." 1 Tim. v. 8.

7. That the management of the fund be conducted by committees of the contributing members, annually appointed; the central committee to be at Dublin, and local committees, subordinate to the central, in each of the principal cities and towns; the central committee having power to appoint local committees wherever they may be required.

A general meeting of the contributors of the Society shall be held once in each year, at such time and place as may be most convenient to the members.

At this meeting, all who are contributors to the amount of £1 1s. per annum, or donors of £10 or upwards, at one time, or by instalments from annual subscribers, till this sum is paid, shall have a voice: they shall likewise be entitled to recommend cases for the bounty of the Society.

At each annual meeting, reports of the different committees shall

be received and read; and the Treasurer's accounts examined and audited.

The following gentlemen were selected to constitute the central committee, with power to add to their number up to twenty-one, viz.:

Sir H. Marsh, Bart., Richard Carmichael, Esq., Dr. Graves, S. Wilmot, Esq., Robert Shekleton, Esq., Arthur Jacob, Esq., Dr. Collins, John M'Donnell, Esq., William Hargrave, Esq., Dr. Brady, Dr. Harvey, Dr. Maunsell, R. C. Williams, Esq., Dr. Mollan, Dr. G. A. Kennedy, Dr. Duncan, Jun.

Treasurer—M. Collis, Esq.

Hon. Secretary—Charles Benson, M.D.

Under the guidance of this committee between two and three hundred pounds have been already collected, and provincial committees have been formed in Roscrea, Belfast, and Armagh. We place the utmost confidence in the zeal and judgment of the central committee, and earnestly invite all our professional friends to join them in their benevolent exertions.

CIRCULAR.

"*Royal College of Surgeons, Dublin.*

"Sir,—The central committee of the Medical Benevolent Fund Society of Ireland earnestly request your kind assistance in promoting the object for which this society has been established. They believe it to be such as will commend itself to the head and heart of every well-regulated mind. The object is to create a fund, by voluntary subscriptions and donations, out of which medical men, and their widows and orphans, may be relieved in cases of extreme distress.

"It has sometimes happened, that by long-continued disease, or some other calamity, the practitioner has been reduced to the most abject poverty, and has left a family entirely dependent on the charity of others for subsistence. This society will endeavour to alleviate such painful occurrences, by the judicious employment of whatever funds they may be able to collect. A moderate sum would, in many instances, relieve the pressing wants of a professional brother, or soothe his sorrows and gladden his declining years; or it would place a widow in a condition to support herself and her children in some humble but independent manner.

"The committee would hope that every member of the profession will contribute towards the good work now commenced. There is nothing in the constitution of the charity to encourage idleness, profligacy, or improvidence. Let the rich give liberally of their abundance, and let the poorer members not withhold their mite. The one owe, perhaps, much of their success in life to the good will and preference given them by their professional brethren; and both should ever bear in mind, that no present prosperity can place them or their dearest friends beyond the reach of those melancholy reverses of fortune which so often occur.

"But it is believed that higher motives will actuate a profession that has ever held a foremost rank amongst the benefactors of the human race, and that the purer principles of Christian benevolence

will influence them on this occasion.—'Whoso hath this world's good, and seeth his brother have need, and shutteth up his bowels of compassion from him, how dwelleth the love of God in him?'

"As this society is not an insurance company, nor a benefit club, but simply a benevolent institution, regulated by the principles of charity, the committee wish it to be understood that contributors have no claim on it, as a *matter of right;* but if, in the dispensations of Providence, they or their families should unhappily be compelled to seek its assistance, they may rest assured that their wants and wishes will receive the earliest as well as the most cordial and considerate attention.

"The committee would also hope, that many persons, not of the profession, will kindly contribute towards this fund. Very many owe to the instrumentality of their medical attendant, the invaluable blessings of health; and although the usual recompence may have been given, it is believed that they will be happy in having an opportunity of still further manifesting their feelings in a manner so touchingly grateful to the entire profession. The public ought not to forget the vast amount of services rendered gratuitously to the poor by physicians and surgeons, the sacrifices of health, and time, and comfort which are every day made, without any hope of reward, and how often they fall victims to their generous zeal in the cause of suffering humanity, while attending the subjects of contagious disease. Nor should the public, especially of Dublin, forget, that some of the noblest charitable institutions which do honour to this great city, have been founded by the exertions of medical men, and in some cases mainly supported by the fortunes which they had accumulated in the discharge of their laborious duties. Of these Sir P. Dun's Hospital, Stevens' Hospital, and the Lying-in Hospital, are splendid examples, and many others of less note might be named. The committee may, therefore, with confidence appeal to that public, so largely benefited, to aid them in their work of mercy.

"Should you, Sir, be so good as to subscribe to this fund, you will please transmit your contribution to the Treasurer, Maurice Collis, Esq, Merrion-square, or to any member of the committee, or to the Secretary. You are also entreated to use your influence in adding to the list of subscribers, and to forward the interests of the society by all the means in your power.

"I am, Sir, your obedient and faithful Servant,

"Charles Benson,

"*Hon. Secretary.*"

Subscriptions already received.—Sir H. Marsh, Bart., 10*l.*; Richard Carmichael, Esq., 10*l.*; Dr. J. Jacob, Maryborough, 10*l.*; Dr. Duncan, 10*l.*; Dr. Benson, 10*l.*; Dr. Kingsley, Roscrea, 10*l.*; Dr. Collins, 10*l.*; Dr. Jackson, 10*l.*; Dr. Kidd, Oxford, 10*l.*; Dr. Kidd, Armagh, 10*l.* 10*s.*; Dr. Boxwell, Abbeyleix, 3*l.*; Dr. Tabuteau, Portarlington, 5*l* ; Dr. Pierce, Tullamore, 5*l.*; Dr. O'Grady, Swords, 5*l.*; Dr. Croker, 5*l.*; Dr. Graves, 5*l.*; Dr. Mollan, 3*l.*; Dr. Purefoy, Cloghjordan, 2*l.*

Annual Subscriptions.—Dr. N. Adams, Achill, 2*l.*; Dr. Alcock, Kilkenny, 1*l.* 1*s.*; Dr. Armstrong, 1*l.* 1*s.*; William Auchinlech, Esq. 1*l.* 1*s.*; Dr. Bird, Banagher, 1*l.* 1*s.*; Dr. Bindon, Moneygall, 1*l.* 1*s.*; Dr. Benson, 1*l.* 1*s.*; Dr. Brady, 1*l.* 1*s.*; T. Blackley, Esq., Armagh, 1*l.* 1*s.*; Dr. Boxwell, Wexford, 1*l.* 1*s.*; Dr. W. Bell, Clonmel, 1*l.* 1*s* ; Dr. Butler, Thurles, 1*l.* 1*s.*; Dr. T E. Beatty, 1*l.* 1*s.*; Dr. Cranfield, Enniscorthy, 1*l.* 1*s.*; Dr. Clinton, 1*l.*; M. Collis, Esq., 1*l.* 1*s.*; R. Carmichael, Esq., 1*l.* 1*s.*; H. Carmichael, Esq., 1*l.* 1*s.*; Dr. Corrigan, 1*l.* 1*s.*; Dr. Cane, Kilkenny, 1*l.* 1*s.*; Dr. Corbet, Innishannon, 1*l.* 1*s.*; Dr. Cumming, Armagh, 1*l.* 1*s.*; Dr. Clayton, Athy, 1*l.* 1*s.*; Dr. Cooke, 1*l.* 1*s.*; Dr. Croker, 1*l.* 1*s.*; Dr. Duncan, 1*l.* 1*s.*; Dr. J. Duncan, 1*l.* 1*s.*; Dr. Dunne, Maryborough, 1*l.* 1*s.*; Dr. Duffy, Finglas, 1*l.* 1*s.*; Dr. Douglas, 1*l.* 1*s.*; Dr. Eustace, 1*l.* 1*s.*; Dr. Fitzpatrick, 1*l.* 1*s.*; Dr. Frazer, Ennis, 1*l.* 1*s.*; Dr. Geoghegan, 1*l.* 1*s.*; Dr.T. G. Geoghegan, 1*l.* 1*s.*; A. Guinness, Esq , 1*l.* 1*s.*; Dr. Hynes, Kinvara, 1*l.* 1*s.*; Dr. Harvey, 1*l.* 1*s.*; Dr. Heron, Lucan, 1*l.* 1*s.*; John Hamilton, Esq., 1*l.* 1*s.*; Dr. Hargrave, 1*l.* 1*s.*; Dr. Hunt, 1*l.* 1*s.*; Dr. Hayden, 1*l.* 1*s.*; Dr. Houston, 1*l.* 1*s.*; Dr. Hetherington, Athlone, 1*l.* 1*s.*; Dr. Harding, Rathdrum, 1*l.* 1*s.*; Dr. Jackson, 1*l.* 1*s.*; Dr. G. Jackson, 1*l.* 1*s* ; Dr. Jacob, 1*l.* 1*s.*; Dr. J. Jacob, 1*l.* 1*s.*; Dr. Joy, 1*l.* 1*s.*; Dr. Kingsley, Roscrea, 1*l.* 1*s.*; Dr. Kittson, Nenagh, 1*l* 1*s.*; Dr. G. A. Kennedy, 1*l.* 1*s.*; Dr. Kennedy, Rathdowny, 10*s.*; Dr. L'Estrange, 1*l.* 1*s.*; Dr. Lawler, Kilkenny, 1*l.* 1*s.*; Dr. Lalor, Tralee, 1*l.* 1*s.*; Dr. Lynn, Sligo, 1*l.* 1*s.*; E. L. Lipsitt, Esq., 1*l.* 1*s.*; Dr. Lane, Wexford, 1*l.* 1*s.*; Dr. Lees, 1*l* 1*s.*; Dr. Law, 1*l.* 1*s.*; Sir Henry Marsh, Bart., 1*l.* 1*s.*; Dr. Montgomery, 1*l.* 1*s.*; A. Mac Donnell, Esq., 1*l.* 1*s.*; Dr. Mac Donnell, Belfast, 1*l.* 1*s.*; John Mac Donnell, Esq., 1*l.* 1*s.*; Dr. Mollan, 1*l.* 1*s.*; Dr. M'Intire, 1*l.* 1*s.*; Dr. Molloy, 1*l.* 1*s.*; Dr. Maunsell, 1*l.* 1*s.*; Dr. Mac Arthur, Shinrone, 1*l.* 1*s.*; Dr. Murphy, 1*l.* 1*s.*; Dr. Nugent, Cork, 1*l.* 1*s.*; Dr. Nolan, Wicklow, 1*l.* 1*s.*; R. L. Nunn, Esq., 1*l.* 1*s.*; Dr. O'Grady, 1*l.* 1*s.*; Dr. O'Beirne, 1*l.* 1*s.*; Dr. O'Brien, Ennis, 1*l.* 1*s.*: Dr. O'Reilly, 1*l.* 1*s.*; Dr. Purcell, Carrick-on-Suir, 1*l.* 1*s.*; Dr. T. H. Purdon, Belfast, 1*l.* 1*s.*; Dr. C. D. Purdon, Belfast, 1*l.* 1*s.*; Dr. Pierce, Tullamore, 1*l.* 1*s.*; Dr. Powell, 1*l.* 1*s.*; Dr. Quinn, Nenagh, 1*l.* 1*s.*; Dr. Roe, Cavan, 1*l.* 1*s.*; F. Rynd, Esq., 1*l.* 1*s.*; Dr. Shekleton, 1*l.* 1*s.*; Dr. Sherwood, Redcross, 1*l.* 1*s.*; Dr. A. Smith, 1*l.* 1*s.*; Dr. Short, 1*l.* 1*s.*; Dr. Sloane, Clonmel, 1*l.* 1*s.*; J. E. Smyly, Esq., 1*l.* 1*s.*; R. Smith, Esq., 1*l.* 1*s.*; Dr. Thornhill, Skerries, 1*l.* 1*s.*; Dr. Waters, Birr, 1*l.* 1*s.*; S. Wilmot, Esq., 1*l.* 1*s.*; R. C. Williams, Esq.; 1*l.* 1*s.*; Dr. Walsh, Ballinakill, 1*l.* 1*s.*; Dr. Walsh, Clara, being the amount of an award from the Poor Law Commissioners, 10*s.*; Dr. Woods, 1*l.* 1*s.*; — Whitestone, Esq., 1*l.* 1*s.*

Pathological Society.—The following is the complete list of the eminent medical men to whom the Pathological Society of Dublin has presented its Honorary Diploma:

Professors Schoenlein, Carus, Tiedemann, Louis, Andral, Cruveilhier, Alison, Todd; Sir B. Brodie, Sir J. Clarke; Doctors Abercrombie, Hodgkin, Chomel, Rokitanski, Carswell, Bright.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XII.—*On Hydrocephalus, which occurs at a particular Period of Life.* By HENRY KENNEDY, A. B., M. B., T. C. D., L. R. C. S. I.; one of the Medical Officers of St. Thomas's Dispensary.

[Read before the Obstetrical Society, May 4th, 1843.]

THE time of the meeting will be taken up for a brief period, while I endeavour to lay before it the description of a form of hydrocephalus, which, as far as I can ascertain, has scarcely, if at all, been noticed by authors. Two or three cases of the form of disease I allude to are given by Abercrombie in his masterly work; but though he has spoken of varieties of hydrocephalus, I find no mention made of this one, and to myself it appears to call for particular notice. Though I thus speak of it, as a particular form of hydrocephalus, I wish it to be distinctly understood, as not differing so much by its symptoms from the more ordinary forms of the disease, as that it occurs at a particular time of life. In fact the disease to which attention is about to be drawn, is not the hydrocephalus of childhood, but of more advanced life; and this may probably be the reason why it has

not been recognized as connected with this disease, and yet it is sufficiently marked in its characters to entitle it to be placed under this head. Within the last nine years upwards of thirty cases of the disease have come under my notice. It is one of a very insidious nature, running a marked course, and unfortunately too often proving fatal.

The period of life at which it is met, ranges between 12 and 25 years: about 15 is a very common time to see it. In my experience it has been much more common among females than males, in the proportion of two to one. Cheyne has observed that when hydrocephalus is seen in persons above ten years' old, it is most common in females.

It usually commences with the ordinary symptoms of fever, but in a very mild form; there is some quickness of pulse, heat of skin, furred tongue, and headach. I say it usually commences in this way, for it may begin by the patient making a distinct complaint of the head for four, five, or more days, before there is any other symptom, the patient all this while going about, and attracting no notice. The complaint in such cases is of giddiness, or weight in the head, and at times pain; and I have known females at a boarding school more than once under these circumstances, and previous to the attack, express a wish to have their hair cut. One instance I saw, where a lady, aged 20, came down to breakfast not so neatly dressed as usual; the following day symptoms of this disease showed themselves, and then it was recollected that she had been complaining of her head for some days previously. I have known other instances where the disease commenced in this way while they were still going about, and where it was the friends who were struck with something strange in their appearance, and not that any complaint was made by the patients themselves.

The most common way, however, for the disease to show itself is, as has been already stated, by symptoms of a mild fever appearing. The remedies employed answer all the expectations, and every thing appears to go on most favourably for ten, twelve,

or fourteen days. I have even known the patient to get so well to all appearance, as to be out of bed and pronounced convalescent, and yet in a day or two take to it again, and be attacked with the disease. In the great majority of cases, however, the patient has not left the bed before symptoms of a different kind from what had been previously present make their appearance, and the disease then pursues its usual course. In fact, many of these cases convey strongly the impression, that the case was one of simple fever up to the twelfth or fourteenth day, but that then some new disease was superadded to it. This may be so, and it would be a point of very considerable importance to ascertain accurately: for reasons, however, to be stated farther on, I have always thought that there existed but one disease from the first.

It has been already stated that at the onset, and often for an entire fortnight, the symptoms are very mild, so much so, that the tongue will be scarcely furred, the patient will even ask for food, and will enjoy sleep at night. There may be some complaint of headach, which local bleeding is sure to remove, and even this in many cases is so slight, that it is only by the closest questioning the patient will admit they have any at all. If, however, the disease I wish to bring under notice is about to supervene, these symptoms gradually change, or more correctly, perhaps, begin to be slightly aggravated, so slightly, however, as to render it difficult to say what day this commences. The tongue becomes more furred; the skin gets something of a feverish heat; and the pulse, which most probably had been down to between 80 and 90, rises to nearer 100. The patients may now too complain of the head, but as a general rule they always make light of this; in only four instances have I seen it to such a degree as at once to draw attention to it. I have sometimes been led to perceive the serious nature of the case by the nurse casually stating, that on the previous night the patient had not slept so well as usual; their rest had been broken by talking in their sleep, or they had awakened with a scream. This was an order of symptoms which ever appeared to me to call for at-

tention, for they have frequently gone on for three, four, and five nights, and yet the patient appeared so well in the day-time as to lead any one to think that those night symptoms were of no consequence. At other times again the first symptom which caught my attention was *vomiting*. It might occur only once, or it might be repeated, but it never took the prominent place that it does in the hydrocephalus of childhood, and in several cases it was entirely absent. I think it occurred more frequently in the morning than at any other period of the day, and I have seen it attributed to the patient eating breakfast before he was thought fit for it.

In the state described, and without any appreciable change whatever, the patient would remain four or five days, more or less, according to circumstances, and then other symptoms made their appearance. The patient would be reported to have rambled a little while awake, and very commonly towards evening; it was momentary, however, and the patient became quite himself when spoken to. At this time too, and sometimes, indeed, earlier, the countenance might be observed to be heavy; when addressed, the patient was perfectly conscious, and the face would brighten up, but when left to himself it would again assume the heavy expression, as if he were inclined to doze.* During the period I am now speaking of, that is, from the twelfth to the sixteenth day from the very commencement of the illness, the pulse generally kept in or about 100, very seldom did it reach 120; the tongue, however, was now a good deal furred, and I may observe, that this sign is a very constant one. The head also was now more apt to be complained of, more particularly if the patients were asked had they pain any where; sometimes they stated that pain did exist, but only when they happened to cough. As a general rule the pain was referred to the forehead just over the eyes, but I met some cases where the pa-

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* Cheyne and other authors have spoken particularly of this expression of countenance in the hydrocephalus of childhood.

tient ran the hand over the entire head, apparently at a loss to localize it. If leeches were applied even at this period, they were sure to give relief for at least thirty-six or forty-eight hours. This state of affairs continued two, three, or four days when at last it was but too evident that some serious mischief was going on. Sometimes this was shown by the dejections being passed involuntarily; at other times squinting made its appearance, but in so slight a degree that I have seen the point disputed: the truth is, that in the first instance at least I have never seen this symptom that it was not intermittent, it was present one moment, and absent the next; or else it might be observed when the patients were left to themselves, but disappeared the moment they were spoken to. When it exists to but a slight degree, it is, I think, better seen at a distance from the patient; it at times affected one eye, and again both. On more than one occasion this trifling degree of strabismus was the first symptom to attract my notice. Connected with it I have observed instances where one eyeball was in a great degree fixed; it is very easy to overlook this sign at first, but when once one's attention is drawn to it, it cannot be mistaken. It gives, as may be easily supposed, a very remarkable expression to the countenance. The only point I have observed about the pupils at this stage of the disease is, that one has been somewhat larger than the other; not that either was dilated, but that they differed in size, the light remaining the same. The globe of the eye itself has been but little injected in the cases which have come under my notice, but it seems to be very general that the eyelids themselves should be only half opened, as it were, with a tendency to droop: I have seen this ptosis very marked in only one eye. On the whole, the appearances presented by this organ *are the most important, and most constant of any of the symptoms of the disease.* The next sign likely to attract notice is very generally the pulse. It has been already stated, that at the commencement of these head symptoms, it had risen a little, possibly from 90 to 108, and that this had gone hand in hand

with other symptoms, showing some increase of fever: to this, however, another stage succeeded, and then in the course of twenty-four hours it was found to have suddenly fallen very remarkably. I have notes of several cases where a pulse above 100 fell in one day to 60, 55, and in one instance to 48, and so remained for a period of two days. This is a symptom which of course, as every one knows, is very constantly observed in the hydrocephalus of childhood; it is, if anything, however, more marked in the form of disease under consideration. Once the pulse had reached this stage the disease progressed much more rapidly and progressively than heretofore; the pulse, after having remained in this way about forty-eight hours, again began to rise, and continued to do so steadily till death, often getting up to 130, 140. The intellect became much more obtuse, it being now difficult to rouse the patient, and finally impossible to do so, coma having supervened. During the time the pulse was so slow, I have seen convulsions attack one side of the body, and if this did not happen, and, indeed, whether it did or not, a spastic state of the upper extremities was very commonly observed the last two or three days of life. Constipation did not attract my notice at all. Symptoms of effusion into the air tubes finally took place under which the patient appeared to sink. Except in being fixed, the pupil towards the last exhibited no remarkable change. The entire duration of the disease is commonly about three weeks. The position of the patient in the bed is very constantly, indeed, on one side, and often with the limbs drawn up, and this till within a day or two of death. This point is worthy of notice, for it is capable of throwing the practitioner off his guard; it is also very common to find a hand of the patient applied to the head, and to see the brows strongly knit even in sleep. Two cases came under my notice where the patients sang nearly the entire night and to the same tune; there was no recurrence of this symptom. I have also seen cases where the patients ground their teeth with a degree of violence almost insupportable. The accounts which the

public papers gave of the last illness of the celebrated Malibran induce me to think she died of this disease.

The appearances found after death are very constant, more so, indeed, than it has ever been my lot to find in any other affection of the brain. On more than one occasion I have written down the appearances that would be found on dissection, which proved to be correct, and this is more than could be said, I believe for any other affection of the kind. This is not, of course, said by way of boast, for any one might do the same.

The morbid changes affect in a great measure the arachnoid at the base of the brain. This membrane will here be found opaque, having a large quantity of gelatinous lymph effused under it, varying in colour between white and yellow, and always particularly well marked on the optic commissure and in the fissure of Sylvius: next to these parts may be mentioned the pons varolii as being the most common seat of the effusion. I have also sometimes, though rarely, found a distinct coating of lymph on the arachnoid, and in three instances this lymph had put on a granulated appearance like very minute tubercles, such as I have often had occasion to observe in the brains of children that had died of hydrocephalus.* The upper surface of the brain was often quite healthy, though at other times it was found more or less congested, while serous fluid in small quantity existed under the arachnoid. There was very constantly effusion into the ventricles varying from half an ounce to two ounces. My opportunities for examining the other cavities have not been so numerous as those of the head. One point, however, connected both with the chest and abdomen has struck me as worthy of notice, though possibly to others it may appear of little consequence. Any morbid appearance found in either of these cavities has been always of the same character, that is the strumous. In the lungs I have found traces of tubercle once, as if they had

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* Dr. Hennis Greene has lately drawn particular attention to this tubercular form of the disease.

been long since deposited, being of a chalky character; but again in two instances they were more recent, but still few in number, and in the crude state. In the abdomen any appearance of this sort was entirely confined to the peritoneum, and here I have twice met small portions of this membrane covered with a distinct coating of tubercular matter, like what every one must have seen affecting the serous membranes. Taken as a whole, however, it was not common to meet any morbid changes in either chest or abdomen, a point in which the disease under consideration differs most materially from the more ordinary form of hydrocephalus.

Such then are the appearances found in this disease. The part of the brain affected is a point worthy of notice; there can I think be very little doubt that it is owing to this that the disease is of so insidious a nature, as I believe it is generally admitted, that disease of this part affects the intellect much less than when other parts of the brain are engaged, more particularly the upper surface. The optic nerves too being so much engaged is a reason why the appearances about the eye should be so marked during life. As to the effusion into the ventricles and the congestion of the upper surface, which are sometimes found, I look upon them as quite secondary in point of time, and, indeed, of importance to the morbid changes at the base of the brain.

Anything of morbid changes found in the thorax or abdomen, I have stated already appeared to me of importance, for though they have been seldom present, and to a very trifling degree, yet, I think they go some way to point out the true nature of the disease of the brain, which I myself consider to be of the strumous character. It may of course be thought by some that the existence of tubercles elsewhere was a mere coincidence, the more so as they were so seldom found, and this view of the question may be sustained. I may mention, however, in answer to this, that I have known two grown up individuals both carried off by this disease; they were brother

and sister, and the former I saw during the course of his illness. And again, I have known a grown up person carried off by it, in a family where two or three of the children had died previously of hydrocephalus. In other words this disease is apt to run in families precisely as common hydrocephalus; hence, it would appear at least to have something specific about it, and different from common inflammation. But probably the point which bears most directly on this question is the treatment which will be alluded to farther on.

The diagnosis of this affection is by no means easy. The diseases with which it is most easy to confound it, are in the first instance simple fever, and in the second hysteria. With the former of these I have known it repeatedly confounded, nor indeed do I know any marked distinction between them, at least at first. The only point is that at a time when the patients would tell you they are better day after day, there exists a something about them which contradicts their assertion. Thus when they would tell you they are getting well, the tongue may be observed to be getting more loaded; this I have seen more than once; and again, when the patient is absolutely asking for food, you may be informed that they have passed a restless night. Circumstances like these should ever put a man on his guard, the more so if they be found at a period of life at which the disease is apt to be met with. One rule I may state as being useful in these cases, which is, that if at the age of fifteen a case of mild fever begin to show untoward symptoms, it is in all probability owing to the affection of the brain I have been endeavouring to describe coming on. I myself have met no exception to this remark, while I have found it particularly useful to keep it in mind. Connected with the diagnosis of those cases where the disease may or may not be simple fever, I have observed, that of the males attacked, three-fourths of them have been persons of a very heavy aspect, any thing in fact but intellectual, the face being too large for the size of the head, and the lips also large, with a coarse skin. The females

have been generally persons of a well marked sanguineous temperament.

Between this affection of the brain and hysteria it is often exceedingly difficult to distinguish. I am free to confess that on two occasions I have mistaken the one for the other; that is two cases of hysteria were so exceeding like the other disease, that I mistook them for it. It may, however, be observed that this is the safest side to commit an error on; many a mistake has I fear happened on the other side of the question, that is mistaking the affection of the brain for hysteria. I need scarcely observe, that it is only in females a mistake of this kind can occur. There are two great points of distinction in hysteria, which will in general, though not always, serve as a means of diagnosis; the one is the state of the renal secretion, and the other, that, though the patient appears to be insensible, she is in reality not so, but can be influenced by external objects.

Little need be said about the prognosis of this form of head affection, except that it is in the highest degree unfavourable. With very few exceptions, indeed, it has, in my experience, ended fatally. I have seen no recovery after the pulse had once fallen. Whether this great fatality be owing to the specific nature of the disease, I shall not take on me to determine, but this part of the subject will be best considered under the head of treatment.

At first view, and taking into consideration the morbid changes found in the brain, one would be inclined to suppose that a treatment holding out at least a reasonable hope of success could be adopted. I can assure any one who may not have seen such treatment tried, that this is far from being the case. I have known treatment carried on from the earliest appearance of the head symptoms, and in other respects also to all appearance of the most judicious kind, and yet the disease has run on to a fatal termination. Mercury, bleeding, iodine, blisters, purgatives, diuretics, and James's powder have all in turn failed. Sometimes the system has remained quite un-

affected by the mercury; at other times full salivation has been induced a week before the fatal termination, and yet it did not appear to even modify the course of the disease. This has occurred within my own observation, and I know it has happened to others, and I am quite at a loss, how to explain it, except by supposing the inflammation to be specific. It will be recollected that the treatment is far from being ineffectual for the time, on the contrary, I have seen bleeding very seldom used that it did not afford the most marked relief, and the patients have over and over again expressed themselves as feeling wonderfully well, but then forty-eight hours was quite enough to dispel the illusion. The disease in truth had been checked but not put a stop to. Reasons have been already given, why I consider this affection to partake of the strumous character. If this should turn out to be correct, an explanation of the great obstinacy of the disease would be afforded. The state of parts found in the brain do not seem to point to any very acute inflammation; on the contrary, I believe they would be set down as more chronic in their nature, and hence it appears to me as in the highest degree probable that the mischief has been going on at least from the period at which the patient had first taken to bed with the symptoms of common fever. But I may be asked, has no recovery taken place within my observation? To this I answer, that I have seen cases do well, which I believe would ultimately have ended in this affection, but then the head symptoms were of a more prominent character, making their appearance earlier, and of course combated as soon as observed. When once ten days had passed without any appearances but those of simple fever, and then that the patient began to exhibit a new train of symptoms, the case, as far as I have yet seen, might be considered hopeless.

The treatment which I believe was rather a means of averting, than curing the form of disease under consideration, consisted in local bleedings repeated according to circumstances, together with the free use of mercury and blisters, and the other treatment which every one's experience would suggest.

In the next case which comes before me as a well marked example of the disease, I shall certainly, besides other means, give a trial to opium. Besides having been recommended in common hydrocephalus, there are I think grounds enough for supposing that certain inflammations are best treated by this drug, and this may turn out to be one of them.

I shall conclude this paper by throwing into a set of propositions the different points to which attention has been already drawn.

1. That an affection of the brain of the hydrocephalic characted is not at all unfrequently met with between the ages of 12 and 25 years.

2. That it is more common in females than males, in the proportion of two to one.

3. That in the majority of cases it commences with symptoms of mild fever, which goes on without change for ten, twelve, and fourteen days.

4. That it sometimes begins by a distinct complaint of the head for some days, the patient still being able to go about.

5. That when the disease commences by fever, the first signs of anything going wrong take place very commonly at night.

6. That a marked increase in the degree of fever may then be observed.

7. That during the progress of the disease the pulse exhibits the characters of hydrocephalus, and to a marked degree.

8. That alterations about the eye are often among the earliest symptoms pointing out that mischief is coming.

9. That the pathology of the affection is confined in great part to the arachnoid at the base of the brain, with more or less effusion into the ventricles.

10. That there are some grounds for supposing the inflammation to be of a specific character, probably strumous.

11. That once the affection has fully declared itself, the treatment has yet to be determined.

12. That local bleedings with mercury and blisters hold out the best prospect of success.

ART. XIII.—*Medical Report of the Western Lying-in Hospital and Dispensary, 25, Arran-quay, for the Years* 1841-42. By FLEETOOOD CHURCHILL, M. D., M. R. I. A., Vice-President of the Obstetrical Society, and of the Association of the College of Physicians; Physician to the Hospital; Consulting Accoucheur to the Adelaide Hospital; and Lecturer on Midwifery, &c. at the Richmond Hospital School; and R. D. SPEEDY, Esq., L. R. C. S. I., Surgeon to the Hospital, and Lecturer on Midwifery, &c. in School of Medicine, Apothecaries' Hall.

THE following report of the hospital embraces a period of two years, that is, from January 1, 1841, to December 31, 1842, inclusive; and, according to the general register of admissions and applications, relief has been afforded to 1506 women, but owing to the irregularity with which many cases were entered in the statistical register, it has been found necessary to exclude a considerable number, in order that no facts might be adduced of the accuracy of which we are not certain. Our records will consequently be limited to the delivery of 1206 women; from these must be deducted 43 cases of abortion, leaving 1163 cases of labour at the full time.

The number of children amounted to 1175 (691 males, and 484 females), of which 63 (44 males, and 19 females) were still-born, or died at birth; of these

12	were premature.	3	were arm presentations.
15	„ still-born.	3	„ funis presentations.
2	„ putrid.	6	„ crotchet cases.
4	„ footling cases.	2	„ forceps cases.
8	„ breech presentations.	1	„ placenta prævia.
1	„ head and hand presentation.	4	„ syphilitic.

The ages of 1067 patients were ascertained as accurately as possible:

77	were at or under	.	.	.	20	years of age.
296	,, between	.	.	20 and	25	do.
370	,, ,,	.	.	25 ,,	30	do.
177	,, ,,	.	.	30 ,,	35	do.
117	,, ,,	.	.	35 ,,	40	do.
40	,, ,,	.	.	40 ,,	50	do.

In 982 cases the entire duration of labour was as follows :

In 357	it was under	.	.	.	.	6 hours.
312	,, between	.	.	6 and	12	do.
214	,, ,,	.		12 ,,	24	do.
50	,, ,,	.		24 ,,	36	do.
17	,, ,,	.		36 ,,	48	do.
11	,, ,,	.		48 ,,	60	do.
15	,, ,,	.		60 ,,	95	do.
2	,, ,,	.	.		100	do.
3	,, ,,	.	.		121	do.
1	,, ,,	.	.		153	do.

The extreme prolongation of some of those cases was owing to the friends of the patient deferring their application for assistance.

The period which elapsed between the commencement of labour and the rupture of the membranes, was noted in 981 cases.

In 167	it was about	.	.	.	.	2 hours.
335	,, between	.		2 and	6	do.
165	,, ,,	.	.	6 ,,	10	do.
113	,, ,,	.	.	10 ,,	14	do.
71	,, ,,	.	.	14 ,,	18	do.
33	,, ,,	.	.	18 ,,	22	do.
46	,, ,,	.	.	22 ,,	26	do.
23	,, ,,	.	.	26 ,,	30	do.
8	,, ,,	.	.	30 ,,	38	do.
9	,, ,,	.	.	38 ,,	40	do.

In 4	it was	about	. . .	50 hours.
2	„	„	. . .	60 do.
1	„	„	. . .	70 do.
3	„	„	. . .	80 do.
1	„	„	. . .	105 do.

In 812 cases the interval between the rupture of the membranes and the birth of the child was as follows:

In 396	it was about	1 hour.	11	it was about	20 hours.
142	„	2 hours.	9	„	28 do.
120	„	4 do.	4	„	35 do.
50	„	6 do.	1	„	40 do.
34	„	8 do.	1	„	50 do.
17	„	10 do.	1	„	120 do.
26	„	25 do.			

In 953 cases, from the birth of the child to the expulsion of the placenta, there elapsed

5	minutes	in	98 cases.	40	minutes	in	30 cases.
10	do.	„	190 do.	50	do.	„	43 do.
15	do.	„	175 do.	60	do.	„	14 do.
20	do.	„	166 do.	From 1 to 2	hours	in	33 do.
25	do.	„	48 do.	„ 2 to 3	do.	„	9 do.
30	do.	„	126 do.	„ 3 to 4	do.	„	5 do.
35	do.	„	16 do.				

The latter cases, when the placenta was retained so long, were under the care of midwives, who applied for assistance on this account.

In 1008 cases the presentation was as follows:

In 941 the head presented.

13 the hand descended with the head.

22 the breech presented—8 dead.

18	the feet	do.	4 do.—the funis prolapsed in 3.
6	the funis	do.	4 do.
5	the arm	do.	3 do.—two of them putrid.
2	the placenta	do.	1 do.

There were *thirteen* cases of twins. In *four* cases the children presented naturally—*six* children were saved, and *two*, which were premature, died. In *six* cases one child presented the breech and the other the head—*ten* were born alive, *two* were lost. In *one* case one child presented footling and the other the head—*both* were saved. In *another*, one child presented the head and the funis, and the other the foot and funis—*both* were lost. In a *third* case both the children presented the feet and funis, and were *lost*.

In *ten* cases there was hæmorrhage between the birth of the child and the expulsion of the placenta; in *six* of which manual extraction was necessary, but no unfavourable results followed.

In *six* cases flooding occurred before delivery—*three* were cases of *accidental*, and *three* of *unavoidable* hæmorrhage. The rupture of the membranes was sufficient in the accidental and in one of the unavoidable cases, and the mothers and the children recovered. It was necessary to turn and deliver the child in the other two cases—*one* of the mothers died and *one* recovered; *one* of the children was saved.

Seven patients were attacked by *convulsions*—all recovered.

One fatal case of *uterine phlebitis* occurred, and several slight attacks of *hysteritis*, which were relieved by the usual treatment.

We met with *one* fatal case of *rupture of the uterus*.

Version was performed *six* times (1 in 243); *five* times on account of presentation of the arm—all the mothers recovered, and three children were saved, the others were putrid; and *once* because of unavoidable hæmorrhage.

The *forceps* were used in *eight* cases (1 in 182). *Seven* of the mothers recovered, and the death of the remaining *one* was caused by disease of the heart.

In *eight* cases the *perforator* was employed (1 in 182). *Six* of the mothers recovered, and *two* died—one from rupture of the uterus, as recorded above, and one from disease of the liver.

Of the 1463 women attended during these two years, only *five* died, or 1 in 292. *One* sank from disease of the liver, *another* from disease of the heart, a *third* after unavoidable hemorrhage, a *fourth* from uterine phlebitis, and the *fifth* from ruptured uterus.

We shall now detail a few of the more interesting cases.

PUERPERAL CONVULSIONS.

Case I.—Mrs. Spalls, who had been subject to severe headachs and epileptic fits during her pregnancy, was taken in labour of her first child on the 5th of June, 1841.

We were called on to see her at 8 o'clock, A.M. on the 6th of June, as she had been seized with severe puerperal convulsions. We then learned that she had been in active labour for more than twenty-four hours, that the liquor amnii had escaped, and we found the os uteri relaxed, but not fully dilated: the head had entered the brim of the pelvis. The convulsive paroxysms recurred every ten minutes; she was quite insensible during the intervals, and her pulse was strong and full.

Twenty-five ounces of blood were abstracted from the arm; the bowels were cleared out by calomel and a purgative enema; and her hair was cut short, and cold applied to the head.

Ten o'clock, A.M.—The fits have abated both in frequency and violence; but it was deemed prudent to bleed her again to sixteen ounces. The labour is steadily advancing; but she remains insensible.

The paroxysms returned with alarming frequency and severity at twelve o'clock; her breathing became stertorous, and the tongue was much injured. Venesection was immediately repeated to the extent of twelve ounces.

As the head now occupied the pelvic cavity, and as another violent convulsion took place while we were consulting about

the case, it was evident that immediate delivery would alone avert the most serious consequences. Mr. Speedy therefore applied the forceps, and after considerable difficulty from the struggles of the patient, and her incessant change of posture, the child was extracted alive, and the placenta soon followed. During the operation this patient was insensible, but soon after delivery became more composed, and the insensibility gradually disappeared.

Severe diarrhœa (which at first resisted the most active treatment) set in on the fifth day, and had very nearly proved fatal; but it was at length arrested by an enema of the solution of the acetate of lead with opium, after which her convalescence took place rapidly.

Case II.—Mary M'K. was delivered of twins on the 4th of October, 1841, at four o'clock, P. M. without the occurrence of any unusual symptom. We learned, however, that her spirits had been much depressed during her pregnancy and when in labour.

She was seized with epileptic convulsions eight hours *after* delivery, which were so severe that she was repeatedly thrown out of bed by the muscular contractions, and there was scarcely a moment's interval between them. Thirty ounces of blood, taken from the arm, had the effect of moderating the violence of the paroxysms; the head was shaved, and cold was applied to it; and the bowels were well cleared out by calomel purges.

The pupils, who remained at her bed-side for *twenty-four* hours, reported that *thirty-six* fits took place during that time. It was necessary to bleed her on the morning of the 6th to sixteen ounces, and to blister the head, after which treatment she gradually recovered.

Case III.—Teresa Malone, aged 19, was delivered of a female child June 7, 1842, at 8, A. M. The labour was natural, and she continued well until the third day, when she was attacked by epileptic convulsions. She was bled largely, with great benefit; the paroxysms ceased, and she recovered well.

Case IV.—Eliza Fitzpatrick, aged 36, was delivered of a female child, after a natural labour, June 18th. On the afternoon of the same day, about twelve or fourteen hours *after* delivery, she was seized with epileptic convulsions, the fits recurring every ten or fifteen minutes. The usual treatment was adopted with success: she was bled freely, her head was shaved and blistered, and calomel and purgatives given internally. The paroxysms diminished in frequency and violence, and ultimately ceased, and she recovered well.

Case V.—Frances Finn, aged 30, was taken in labour of her first child on the 17th of October, 1842. Assistance was applied for on the 19th, in consequence of her having been attacked by convulsions. The head was in the cavity of the pelvis; but the labour pains had diminished in force, and caused no advance. The fœtal heart was inaudible. Under these circumstances we decided to deliver by the crotchet, which Mr. Speedy accomplished with some difficulty, owing to the violent convulsive struggles. The patient recovered well.

PLACENTA PRÆVIA.

Case I.—Mrs. Wade applied to the hospital, February 2, 1842, in consequence of flooding which had been going on for some time, but had increased at that time on the accession of labour pains. On examination the edge of the placenta was distinctly felt down at the edge of the os uteri, from which it had been partially detached. As the pains were good, and the head descending, it was sufficient to rupture the membranes, to arrest the hemorrhage. She was shortly after delivered of a living child, and recovered well.

Case II.—Isabella Currin, aged 36, entered the hospital on account of flooding, with which she had been attacked a month before. On her way from the country she lost so much blood that it was deemed advisable to lose no time after the os uteri became dilatable. Dr. Churchill accordingly

turned and delivered the child; but though very little blood was lost during the operation, she was so utterly exhausted by the previous loss, that she sank in a few hours.

VERSION CASES.

Case I.—Eliza Neil, aged 45, was taken in labour of her fourth child at Kingstown, on the 27th May, 1841, when she came in to her lodgings at Moore-street, and applied for assistance.

Mr. Speedy found that the waters had been discharged, and that the left arm presented: he succeeded in turning the child, which was born *alive*. This patient was soon able to sit up, and recovered well.

Case II.—Mary Tully. Mr. Speedy was called to visit this patient on the 25th of October, 1841, at 7 o'clock, A. M., when he ascertained that the arm presented. As this woman had been twelve hours in labour, as the waters had escaped over night, and as the uterus was acting vigorously, he lost no time in turning the child; which was putrid.

A slight attack of peritonitis supervened, but soon yielded under the usual treatment.

Case III.—Margaret Kennedy, aged 30, residing at Francis-street, applied for assistance on the 19th of December, at ten o'clock, P. M., when she had been in labour for twenty-six hours. Mr. Speedy ascertained that the left arm presented, and that the uterus had contracted closely about the child, in consequence of the premature escape of the liquor amnii. He experienced considerable difficulty in the introduction of his hand, but succeeded after some time in turning the child, which was putrid.

This woman had suffered a severe attack of bronchitis during her pregnancy, for which she had been under treament for more than two months in the Meath Hospital. Two days after her confinement she was seized with troublesome cough, pain in the chest, &c. &c.; but she eventually got well.

Case IV.—Mrs. Doyle, Smithfield, applied for aid on the 23rd of April, 1842. The pupil on duty sent for Mr. Speedy as the arm presented: the waters had escaped, and the pains were quick and strong. Mr. Speedy at once proclaimed the nature of the case, and proposed the operation of version, but could not induce the patient to submit to it for some time. In consequence of this obstinacy the operation was rendered more difficult; but he at length succeeded in extracting the child *alive*.

The placenta was expelled in ten minutes, and both mother and child did well.

FORCEPS CASES.

Case I.—Mrs. O'Loghlan, aged 34, was taken in labour of her first child on the 14th of January, 1841, at 4 o'clock, A. M. The pains continued during the day and following night.

Her friends applied for our assistance in the afternoon of the 16th of January; we learned from them that the liquor amnii had escaped some days before the accession of labour, that her pains had been very strong and frequent during the past night, but were now weak and distant; her pulse was quick, 130, skin hot, tongue dry and brown; and it was evident there would be danger in delay: the head occupied the pelvic cavity, in the third position. It was determined to deliver her immediately, and Mr. Speedy extracted the child *alive* with the forceps. She recovered without any bad symptom.

Case II.—Mary Oldfield, 45 years of age, was taken in labour of her first child on the 31st of May, 1841. The pains were ineffective for many hours, but they increased the next day, and continued until the membranes were ruptured, at 11 o'clock, P. M. on the 1st of June. The os uteri was thin, rigid, and undilated, and the head remained above the brim.

On the 2nd of June, at 9 o'clock, A. M., the head had just entered the brim of the pelvis. Tartar emetic was given with

the view of relaxing the passages. The pains were very severe and frequent: pulse 90.

2nd of June, 9 o'clock, P. M., we found the head much lower, with the face anteriorly. She had now been in active labour more than eighty hours, the second stage had lasted about twelve hours, and there did not seem any prospect of its being terminated without artificial assistance. As the pulse was very quick, the pains ineffective, the skin hot and dry, the abdomen very tender, the stomach exceedingly irritable, the face greatly flushed, and she complained of headach, Dr. Churchill applied the forceps, and with some trouble extracted the head; the child was still-born. This woman recovered slowly.

CASE III.—A poor woman named Doran, aged 48, who had suffered great inconvenience from palpitations of the heart, incessant cough, difficulty of breathing, and severe pain in the left side of her chest for nearly two years, was taken in labour of her *fourteenth* child on the 8th of December, 1841.

A midwife requested us to visit her on the 10th of December, stating that the pains had been strong and frequent, but were now weak and distant, that the waters had been discharged more than thirty hours, and that she was nearly exhausted.

We found her in a worse situation than we expected; her countenance was sunk and distressed; her eye languid; her pulse quick, feeble, and *intermittent;* the belly tender to the touch; her breathing greatly oppressed, and uterine action languid and ineffective. No delay could be allowed, and as the situation of the head and capacity of the pelvis permitted the use of the short forceps, Dr. Churchill delivered her with that instrument.

After the delivery was completed, she continued in the same state as before: her pulse was 130, weak and intermittent; skin cold and clammy; respiration hurried and oppressed: from which condition she never rallied, and sunk forty-eight hours after delivery. We could not procure permission to make a post mortem examination.

It is quite evident that in this case death rusulted from pre-

vious disease, and the neglect of the midwife in not sending sooner deprived her of the benefit of an early delivery.

Case IV.—On the 20th December, 1841, Mr. Speedy was requested by Dr. Maguire of Chapelizod, to visit a poor woman named Merry, who had been in labour of her first child for three nights and days.

He was informed by the midwife that the membranes had given way soon after she was taken unwell, that she had endured constant and powerful expulsive pains for forty-eight hours, but that her labour had gone off suddenly at 12 o'clock the night before. Her pulse was 130, the skin was hot and dry, and her tongue brown; she complained much of dizziness and headach, the stomach was exceedingly irritable, and she felt great tenderness of the abdomen on pressure; the urine was retained, and the uterus was perfectly inactive; the motions of the child had not been felt for twenty-four hours.

The head occupied the pelvic cavity. After passing the catheter, Mr. Speedy delivered her with the forceps, and the child was born alive. She recovered without a single unpleasant symptom.

Case V.—Anne Gaffney, aged 40, sent to the hospital on the 13th of April, 1842, when she had been thirty-four hours in labour of her ninth child. The membranes had given way twelve hours before. We ascertained that the anterior fontanelle corresponded to the left acetabulum, that she had suffered very severe pains for more than twenty-four hours. Her pulse was very rapid, she complained of considerable tenderness of the abdomen on pressure, and of headach.

As this patient, on former occasions, had been always delivered after a very rapid labour, and as the child's face was turned forwards, the cause of delay was evident; and as the symptoms of distress were alarming, we determined to relieve her, and Mr. Speedy extracted a living child with the forceps.

She had an attack of hysteritis after delivery, but eventually recovered well.

Case VI.—October 6, 1842. We were called to see Mrs. Nowlan, aged 40, the mother of several children, two of whom presented the arm, and were successfully turned by Dr. Churchill. She has now been in labour thirty hours, and the second stage has lasted about twelve. The head and a hand are presenting, and although the pains appear great she has made no progress for several hours. She complains of great exhaustion, and is very restless: pulse 110, tongue dry and furred, skin hot. Dr. Darley was called into consultation, and it was determined to deliver with the forceps. This was effected without difficulty by Dr. Churchill, and the patient recovered without a bad symptom. The child had been dead some time.

Case VII.—Jane Attwell, 32 years of age, was admitted into hospital, in labour of her first child, on the 20th of December, 1842. It was then ascertained that the membranes had given way, and the head presented, but did not descend into the pelvis for sixty-five hours. After the second stage had lasted nearly twelve hours, symptoms of aggravated distress set in, when Mr. Speedy, after consultation with Dr. Darley, delivered her with the forceps. The child was born alive.

This woman was discharged quite well on the twelfth day.

Case VIII.—Mary ——, aged 35, was taken in labour of her fourth child, and when we were summoned she had been suffering regular and good pains for twenty-four hours, but owing to malposition of the child's head, the progress was arrested and it was found necessary to interfere.

Dr. Churchill applied the forceps and delivered the patient safely of a living child. Both did well.

CROTCHET CASES.

Case I.—Mrs. Byrne was taken in labour on the 2nd of January, 1841, but the pains were neither frequent nor severe until the 4th, when the os uteri was slightly dilated: pulse natural.

January 5th, the pains recurred every five minutes; the os uteri was dilated to the size of half a crown.

January 6th, 11 o'clock, A.M.—The pains have increased in power; pulse 90. A draught of castor oil was administered, and acted well. The membranes gave way at 9 o'clock, P.M., when a perceptible improvement took place in the character of the uterine efforts. Nauseating doses of tartar emetic were prescribed, as no increase of dilatation had taken place. Pulse 90.

January 7th, 11 o'clock, A.M.—The os uteri is now fully dilated; but although she has suffered incessantly during the night, the head has not descended into the pelvis. Pulse 100. As she had not slept for two nights, a full dose of opium was given, which obtained five hours' sleep. The pains then recurred, and continued during the day; but we did not find that the head had made any progress at 10 o'clock, P.M. Dr. Darley then recommended us to give her half a drachm of the ergot in decoction, which had the effect of increasing the pains, and some descent of the head was perceived. Under these circumstances we determined to wait until morning, unless unfavourable symptoms should occur.

January 8th.—As the violent and continued action of the uterus had not caused the descent of the head, as the woman seemed almost worn out, and as the fœtal heart could no longer be heard, Dr. Darley recommended us to relieve her with the crotchet, any other mode of delivery being out of the question; and Mr. Speedy proceeded to the operation without loss of time; but his endeavours were materially frustrated by the restlessness of the patient. He extracted the child with some difficulty, which was produced by the closed hand having been jammed into the brim with the head.

The placenta was expelled in a short time. This poor woman recovered her usual health in a few days.

CASE II.—Mary Hamilton, aged 35, was visited by Dr. Maguire at Chapelizod, during the evening of the 27th of

April, 1842. She had then been in labour for some hours: the membranes had given way, and a coil of the funis (*which had no pulsation*) lay in the vagina. As the pains were good, he simply prescribed some purgative medicine, and left her to the natural efforts.

She was admitted into hospital on the 28th of April, when she had been thirty-two hours ill. The funis was discoloured, and the hand was found to present with the head. Pulse 80.

April 29th, 5 o'clock, A. M.—We were summoned to her bedside, in consequence of the pains having diminished in strength and frequency: her pulse had risen to 120. As the head had not descended into the pelvis, and as the child had been dead for many hours, Mr. Speedy delivered her with the crotchet.

She left the hospital quite well on the ninth day.

Case III.—Mary Lynch, aged 30, Bow-street, was taken in labour of her seventh child on the 27th of September. The pupil on duty found her going on favourably at 12 o'clock, P. M., the os uteri being fully dilated, the head descending, and the waters discharged.

From this time the pains became stronger, and the head occupied the pelvic cavity about 3 o'clock in the morning of the 28th of April. During an effort to evacuate the bladder, she fainted; and on examining the pulse on her recovery, it was found to intermit at every fifth beat. Her face was alternately flushed and pale, and she was slightly delirious.

We visited her at 4 o'clock, A.M., as she had fainted repeatedly, and the intermission of the pulse continued; the labour was progressing favourably. After the administration of some stimulants the fits ceased.

The fainting returned at 6 o'clock, the pulse became more intermittent—in short, she was reduced to the lowest ebb of life, and it was evident that there would be great danger in further delay; and as the fœtal heart was inaudible, Mr. Speedy delivered her with the crotchet.

The intermission of the pulse ceased immediately after the

birth of the child; but she remained in a very debilitated condition for some hours.

At 4 o'clock, P. M. of the same day she had rallied wonderfully, after which she recovered rapidly.

CASE IV.—Mary Ward, aged 32, a dressmaker, and of very sedentary habits, was taken in labour on the 1st of October, 1841, at 12 o'clock, P. M., when the waters were discharged. The pains continued very strong during the night and following day; but the os uteri dilated very slowly.

October 3rd, 10 o'clock, A. M.—The head, which was evidently of a very large size, had descended into the pelvis in the third position, the pains were strong and regular, bowels free, pulse quiet.

October 4th, 2 o'clock, A.M.—The pains had ceased to produce any effect; she complained of headach, the pulse was 130, her abdomen was exceedingly tender, the head (which was putrid) was jammed into the pelvis. We therefore deemed it prudent to relieve her, and Mr. Speedy lessened the head, but experienced considerably difficulty in extracting it, as the bones broke down under the crotchet.

In this case it became necessary to remove the placenta. She had a slight attack of hysteritis, which was subdued by the usual remedies, and she ultimately recovered.

CASE V.—Jane Lynch, aged 36, was admitted into hospital July 13, 1842, at 10 o'clock, A. M., in labour of her first child, when it was ascertained that the membranes had given way for some time, that the os uteri was rigid and undilated, and that the head presented.

July 16th, 6 o'clock, P.M.—Her pains have recurred regularly since her admission, at intervals of about five minutes; the os uteri is now fully dilated, but the head has not descended through the upper outlet. She is impressed with the idea that she will die. Pulse 90. As she complains of great weariness, an anodyne was prescribed, which obtained four hours' sleep.

July 17th, 2 o'clock, P.M.—The head has passed lower into the pelvis, and the pains have increased in frequency and strength, pulse 100; fœtal heart audible; skin cool; under these circumstances we resolved to leave her to the natural efforts a little longer.

July 18th, 8 o'clock, A.M.—Her skin is hot; pulse 130; tongue dry and brown; pains ineffective; vagina hot and dry; abdomen tender. These urgent symptoms called for immediate delivery, and as the fœtal heart could no longer be heard, Mr. Speedy perforated the head, and extracted the child without difficulty. The placenta was retained, and it became necessary to remove it.

She remained in a very precarious state for two hours, her pulse being extremely weak and rapid, the extremities cold, and her spirits extremely depressed. On the free administration of negus, and brandy and water, she rallied somewhat, the pulse resumed a more encouraging steadiness, and she fell asleep, during which she had a frightful dream, and awakened suddenly, exclaiming, "that her hour of retribution was at hand," immediately after which a violent convulsion terminated her existence.

It is evident that the depressed state of her mind, which arose from having been a victim of seduction, as well as her ad-advanced time of life, rendered her very unfit to undergo such prolonged suffering.

Post Mortem Examination.—The liver was greatly enlarged, of an exceedingly pale colour, and so soft that the slightest pressure broke down its structure; the gall bladder was very large, and distended with thin, light-coloured bile; the kidneys were considerably enlarged, and much paler than natural.

Case VI.—Mrs. Moore was admitted into hospital on the 16th May, 1842, after she had been twenty-four hours in labour. We found the waters discharged; a coil of the funis, which had ceased to pulsate, prolapsed; and the head firmly wedged in

the brim. The pulse became quick four hours after her admission, when we determined to relieve her. Mr. Speedy delivered her with the crotchet; and she went home quite well in ten days.

Case VII.—We were called to see Mary M'Cormick, aged 30, at Kilmainham, on the 8th of August, 1842, who was in labour of her fourth child since the preceding day, at two o'clock, when the waters were discharged. We found the os uteri slightly dilated, and the head presenting. As the soft parts were rigid, nauseating doses of tartar emetic were administered, and the pains soon improved.

We had reason to hope that this poor woman would do well, but received a note from the pupil in whose care she was left, at 8 o'clock in the evening, announcing that she had complained of a cramp-like pain in the abdomen, during which the nurse heard a cracking sound—when the pains ceased suddenly; the pulse became small and weak, and 140; hands cold and clammy; countenance collapsed; breathing difficult, &c. &c.

These symptoms sufficiently convinced us of the nature of the accident, and Mr. Speedy at once delivered her with the crotchet. The placenta was expelled. She became delirious, with a small, tremulous pulse, and cold extremities, under which symptoms she expired in four hours.

We could not procure permission to examine the body.

Since the establishment of the hospital, seven years ago, 3211 women have been attended, of whom 15 died, or 1 in 214.

There occurred	4	cases of	unavoidable hæmorrhage—	1 in 802.
„	6	do. „	accidental hæmorrhage	1 in 525.
„	34	do. „	hæmorrhage after labour	1 in 94.
„	10	do. „	convulsions (3 lost)	1 in 321.

Version was practised in seventeen cases—1 in 188. Sixteen recovered. Six children saved.

The forceps were used in eleven cases—1 in 291. Ten recovered. Seven children saved—two putrid.

The perforator was employed in twenty cases—1 in 160. Seventeen recovered.

ART. XIV.—*Cases of acute Glanders in the Human Subject, terminating fatally.* By CLEMENT HAMERTON, Surgeon to the Castletown Dispensary, Nobber.

THE disease of glanders in the human subject is one of such importance, and has of late naturally occupied so much of the attention of the Profession, as well as that of the public, that I have been induced to lay before the readers of the "Dublin Medical Journal" the result of my experience of it for the last two years, and in doing so, it is not my object to enter upon the history of the disease, or to recapitulate what has been known on the subject, since the period when first Dr. Elliotson more particularly directed the attention of the Profession to it; neither shall I attempt the more difficult and obscure question of what the true nature of the disease consists in; but with a desire of assisting in forming an early diagnosis of this disease, of confirming some points, and endeavouring to clear up others, as to the mode of communication of glanders and farcy in the human subject, I proceed to give in detail the following cases, with as much minuteness and brevity as is consistent with the importance of the subject; adding to them an account of the disease in the ass, communicated to the animal by inoculation with matter taken from the pustules that appeared in one of the subjects of the disease, and concluding with a few general remarks on the subject.

Thomas Plunket, æt. 63, July, 1841. He is a farm steward, and has been for the last two months attending upon a glandered horse, using different remedies for the cure of the disease, applying blisters over enlarged maxillary glands, and afterwards

dressing them, also injecting astringent lotions up the nostril of the animal. His master finding the above remedies failing in bringing about a cure of the disease, had the horse shot. He is married and has a large family; they all live in a small, confined, ill-ventilated cabin. On the 15th of the month I first visited him, and was informed that a week previously he was suddenly attacked with a severe shivering fit of some hours duration; this was attributed to his standing out all day inspecting the washing of wool. The shivering fit continuing for some hours' during the night, his family made for him a warm drink, which threw him into a great heat, and he passed a very restless night without having any sleep. Next morning he got up early to his usual work, and finding himself very ill with pains and stiffness of his joints and back, also a general soreness over him, also feeling tired and chilly, he was obliged to quit his work, get home, and go to his bed. He particularly complains of the severity of the pain and stiffness of his right wrist extending to the forearm and elbow. The above symptoms continuing unrelieved, and his right wrist and forearm becoming more painful, hot and swollen, his family sought for my advice, and on inquiry I found that he had been eight days ill. Redness of a dull erysipelatous hue extends from the wrist to the elbow of the right forearm, pitting and painful on pressure; no appearance of redness or swelling about any of the fingers; his face is pale and anxious; he complains of pain in the head, vertigo, and tinnitus aurium; his pulse is 120 and small; his skin is hot and dry; he has had no sleep for the last three nights, and is observed occasionally to rave; bowels constipated, and urine scanty. Eight leeches were applied to the forearm; camphor mixture and carbonate of ammonia, with wine, were ordered to be administered to him during the day.

16th. He passed a very restless night, and raves more; his countenance is sharp, pale, and leaden white colour; pulse 120; respiration hurried; he has been troubled during the night with a constant cough, and towards morning he commenced expecto-

rating a frothy fluid; redness, swelling, and pain have increased in the forearm since yesterday; pain is also complained of along the inner side of the arm to the axilla. On examining the axilla, slight tumefaction with tenderness is observed; circumscribed patches of redness are observed along the inner side of the arm.

17th. He had a bad night; no sleep; cough more troublesome, and expectoration purulent; diarrhœa; his pulse 130, and small; his tongue brown in the centre, and white towards the edges; observed to rave more; the forearm more swollen, and œdematous, pitting on pressure, and to the touch feeling as if fluid were contained in the parts pressed upon. Three pustules containing a cream coloured fluid have appeared on the right arm, about the size of an almond, and are unattended with surrounding redness; red lines are observed on the inner side of the arm, and the swelling of the axilla is greater to day.

18th. He is in a low muttering delirium to day, but conscious, and capable of being roused; his breathing is short and hurried; pulse 130, small and compressible; diarrhœa; six more pustules have appeared, one on the right thigh, three on his back, and two on the right ala nasi; on the surface of the inflamed forearm, depressed vesicles containing a dark fluid have appeared, on pressure, the parts beneath have a soft, boggy, inelastic feel, the same condition of parts is observed in the axilla extending beneath the great pectoral muscle.

19th. He spent a miserable night and raves constantly, his tongue is dry, brown, and tremulous; his pulse is quick, small, and undulating, at times difficult to be felt; involuntary discharges; cough and difficulty of expectoration, a number of pustules containing a thick purulent secretion, without surrounding redness or swelling, have appeared since yesterday's visit, the red patches on the arm are now raised, hard, and spreading out to some extent, presenting in the centre a bluish black appearance; he breathes through his nose, like to the breathing in polypus nasi; a thick glutinous dark matter flows

from the right nostril, the pustules around the nasi have increased in number; the tumefaction of the ala nasi and cheek has extended to the lids of the right eye, closing it up.

20th. His pulse is small, thready, and difficult to be felt; the low muttering delirium is changing to stupor. The right side of the face, eye, and forehead is now engaged in one general tumefaction. The pustules have increased in size and number; a dark, fetid, and bloody coloured fluid blocks up the nose. On the opposite side the disease appears; the left ankle is red, swollen and tender, also an erythematous blush is observed on the left knee. The pustules on a hard inflamed base with a dark centre, have completely sloughed, leaving a complete loss of substance in their place. The vesicles on the inflamed forearm are quite depressed. The arm is becoming shrivelled and black; the axilla is very much swollen; a number of pustules containing a cream coloured fluid, and quite subcutaneous, have appeared on the back.

21st. On approaching his bed side, an abominable fetor escapes from his person; coma has supervened since yesterday; loud rattles in his throat; no pulse to be felt at the wrist; his face, nose, and forehead present a more swollen appearance today; his approaching dissolution is so evident, that I declined continuing the investigation of his case any further. He died at one o'clock this day. No post mortem allowed.

Patrick Carolin, æt. 43, March 16, 1842, is a ploughman, of strong plethoric make, and very active; he is married, and has a family; he lives in a small confined cabin in which other persons dwell. One of the horses he drives in his plough is labouring under chronic farcy, for which it has been under treatment, and is getting well. The driver's business is to take care of the horse, to clean him, make him up for the night, and he has also undertaken to apply remedies to the open farcy buds and ulcers on the horse, and also to rub in an ointment to promote the growth of hair. In the same locality there is also a glandered horse, with which he has nothing to do, but other

persons are about the glandered horse, applying remedies for the cure of it, and have escaped the disease. I was sent for in a hurry to visit him, as he was considered to be labouring under erysipelas of his right leg, which had reached to within two inches of the knee-joint. On my arrival I found a number of persons about him very much alarmed as to his state; the man's own condition greatly aggravated by the crowded state of the small room he lay in, and the restless anxiety and ill-judged questions put to me by his friends around him. On inquiry I was told that he had been ill since the 8th of March, that his illness commenced in a severe shivering fit, followed by hot and dry skin, severe pain in his loins, lassitude, loss of appetite, thirst, and constipated state of bowels; he continued in this condition for four or five days, when he was obliged to take to his bed, in consequence of severe pain, stiffness, and swelling of his right ankle. His present condition is the following: he complains of severe pain in his head; giddiness when raised in bed, and very desirous to be laid down again; his face is pale; his tongue is brown in the centre, moist towards the circumference; his pulse 110, and strong; he has had no rest for the last few nights from the pain of his limb; his leg is red, swollen, and painful on pressure; the redness extends from the ankle to within two inches of the knee-joint, there terminating in a defined border; the feeling afforded on examination of the limb is that of a sense of fluctuation, particularly above the outer malleolus, and middle third of the limb; the foot is pale, and œdematous, pitting deeply on pressure. The above condition has existed for the last three days; the character of the redness of the limb is that of a dark erysipelatous appearance; he complains of pain, stiffness, and heat of his right wrist, elbow, and shoulder, and also of severe pain along the inner side of the right or affected thigh. At this stage of the disease, and supposing it to be of the nature of spreading erysipelas, I applied a pencil of nitrate of silver immediately above the inflamed border, and above that again a strip of blistering plaster, ordering

medicine for the confined state of his bowels, and when they were relieved, an antimonial solution was to be taken through the course of the day. The limb to be poulticed and fomented with chamomile and poppy head.

17th. He had a restless night, and no sleep; his countenance is pale, and indicative of great distress and pain; his pulse is 120 in the minute; his breathing is short and hurried; he sighs frequently; tongue dry and brown; urine scanty and high coloured; the limb is more painful; the redness and swelling have not increased or advanced upwards since yesterday; he complains of pain along the inner side of the thigh; on closely examining the surface of the thigh, red lines can be seen passing up to the groin; two soft inelastic tumours have appeared on the surface of the inflamed leg, yielding an obscure feel of matter.

18th. He raved a good deal throughout the night, and feels weaker to-day; his pulse is 130, and compressible; his face is pale, and features sharpened; tongue covered with a brown crust; the soft boggy eminences of the limb are more prominent to-day; pain and stiffness of the ankle also more distressing; the red lines passing up to the groin appear spread out at intervals into patches of redness; tenderness now for the first time complained of in the groin; two openings were made into the soft tumours of the leg, nothing escaped but a little blood, although freely opened; carrot poultices and resinous ointment were applied to the limb; and carbonate of ammonia, wine, and opium, were ordered during the day.

19th. He had a very restless night, and was observed to rave more; pulse as yesterday; tongue changing from a brown to a dark crust on it; lips and teeth covered with a similar incrustation; the redness of the limb has changed to one of a darker hue, and it is not so painful; the foot is much swollen and pale; a patch of redness is observed on the inner side of the knee; he complains of pain and stiffness of the right wrist.

20th. He had a more restless night than the one previously; pulse and other symptoms as yesterday; he complains of his

right wrist as more painful, tender, and hot; two broad patches of erythematous redness are observed on it; on further examination of the arm two fully maturated pustules, subcutaneous and circular in shape, without surrounding redness or swelling, have appeared; the soft tumours on the leg continue still prominent; the surrounding integuments have a soft boggy feel; the colour of the limb is now dark; the thigh is more painful, and the glands in the groin are more swollen and tender; continue the wine and carbonate of ammonia with the addition of an opiate at night.

21st. Another sleepless night, and he is suffering great pain; his face is pale and sunken; pulse small, quick, and reckoned with difficulty; skin is harsh and dry; diarrhœa; the inflamed surfaces on the wrist are prominent in the centre, with a surrounding bright red, hardened base; on the apex of the redness a dark eschar appears, which is encircled by purple rings; leading from the inflamed surfaces red lines are observed traversing the forearm to the inner side of the elbow, here and there spreading out into small patches of redness; he complains of pain if pressure is applied to the inner condyle of the humerus; three more subcutaneous pustules have appeared on the chest.

4 o'clock, P. M.—He complains of pain, weight, and fulness, across the forehead; a red erythematous blush appears over the right eye; he also complains of tenderness of the scalp of the same side; pain and swelling are also greater in the groin; continue the opiate.

22nd. He has passed a very restless night, and raves more; he is also very heavy, and symptoms of stupor about him; there is also more of prostration; pulse and other symptoms as yesterday. The redness observed on the forehead the day before has now extended to the right eyelid, closing it up, and has spread to the side of the face and nose; in the centre of the inflamed surface a gangrenous eschar has appeared, with complete loss of sul stance, purple lines extend from it on all sides; from the right nostril a thin ichorous fluid escapes, forming a streak down

the cheek, to the angle of the mouth ; the pustules on the wrist are in an advanced state of sphacelus ; the surrounding inflammation of a bright red colour, spreading out extensively all around ; six more subcutaneous pustules have appeared since yesterday ; a patch of redness appears on the opposite ankle, and three superficial pustules on the thigh of the same side.

23rd. He is in low muttering delirium, and requires to be roused at times out of approaching stupor ; pulse feeble, and difficult to be reckoned ; breathing short and hurried ; tongue black and tremulous ; tremor of the limbs, and subsultus ; the gangrenous eschar has spread on the forehead ; the side of the face is more swollen ; a dark grumous and tenacious fluid adheres to the nose and side of the face ; the swelling has spread upwards on the scalp, which has a soft boggy feel ; the gangrenous eschars on the wrist are more open, and give out a very fœtid smell ; numerous other pustules have appeared on the body ; his leg is less swollen ; the prominent tumours are now in a state of sloughing, without casting off the deadened cellular membrane ; the lymphatics of the thigh are also more swollen ; the tumefaction and tenderness in the groin are increased.

24th. He is in complete stupor, and becoming comatose ; the mortification on the forehead has extended to the eye-lid ; the nose more swollen, and vesicles containing a dark fluid appear on the surface of it ; a large mass of sloughy cellular membrane has come away from the tumours before described on the limb ; deep, foul, and ragged cavities appear in the situation of the tumours ; more pustules have appeared on the body.

25th. He is in profound coma this morning, and in the course of the day he died.

Richard Keegin, æt. 56, March 22nd, 1843 ; is of a thin, spare habit, unmarried, and a labourer ; he has been driving a glandered horse during the entire winter. The horse was the property of a neighbouring farmer, who was anxious to have him cured, as he was rather a valuable one, and had him sent to this man's cabin to have a number of remedies applied to the

horse, at the same time allowing him to work him. The persons who were in the habit of applying the remedies, such as lotions to the nose, giving physic, &c., have all escaped. This man's family are wretchedly poor, and live in a small cabin; during his entire illness there has been no change of raiment. The disease commenced eight days ago, in a severe shivering fit; lassitude, loss of appetite, and thirst; pain and stiffness in his right ankle, and general soreness over him; his bowels are confined; tongue white; pulse 80 and full; ordered him a cathartic bolus, and an aperient mixture, and also to have the ankle fomented and poulticed.

25th. He has had no rest since his illness commenced; his tongue is brown in the centre, and he complains of soreness of his throat, and difficulty of swallowing; there is also tenderness in the sub-maxillary region; his face is flushed; his ankle is œdematous, red, and painful; on looking into the throat, there is observed an erythematous blush on the back of the palate, and the tonsils are also slightly swollen; his pulse is 86; bowels relieved; urine scanty. The palate and tonsils were freely touched with a pencil of nitrate of silver; ordered a diaphoretic mixture during the day, and to have an opiate at night.

26th. The soreness of his throat and difficulty in swallowing have increased; he is also very hoarse; his tongue has a brown crust on it; lips are swollen and asunder; he complains of pain across his forehead, and fulness over the eyes; his face is flushed; the ankle and foot are more swollen, a patch of redness extends along the outer ankle; his pulse is 100 and small.

27th. He passed a very bad night; his tongue is swollen, black, and fissured; his lips more swollen; teeth and gums covered with a dark crust; difficulty of swallowing increased; complains of pain along the trachea; the sub-maxillary gland swollen and tender, also redness and swelling observed on the right sub-mastoid region; redness of an erysipelatous character appears in the centre of the forehead, extending to both eyelids, closing them up, also engaging the nose, which is swollen and

red, and a thick, dark, tenacious fluid blocks it up, which causes snuffling in his breathing, the tears flowing down his cheek. The ankle is more swollen, and presents a diffused redness on the outer side; the swelling has not advanced upwards, nor does he complain of pain extending up the limb; his pulse is 120, and feeble; diarrhœa; is observed to wander in his mind at intervals during the day.

28th. Swelling and redness have spread over the entire forehead; both eyelids more swollen, also the nose, the tip of the nose is quite black; dark coloured grumous fluid adheres to the nose; the left ala nasi is surrounded with a number of pustules containing a cream coloured fluid; one pustule appears on his cheek; three red pimples observed on his arm; his voice is weak, hoarse, and tremulous; his breathing is short and hurried; his tongue is covered with shreds of ropy dark fluid adhering to it and the palate; upper lip greatly swollen; gums and teeth quite black; his ankle is painful; the dorsum of the foot is pale and œdematous; the redness on the outer ankle has not increased; pulse and other symptoms as the day before.

7 o'clock, P. M.—Pulse 120 and compressible, obliged to be raised up in bed; diarrhœa; the swelling and redness more prominent on the forehead; the nose swollen in its entire extent, the lower half of it quite black; a vesicle containing a dark fluid on the right ala nasi; the ankle more swollen, less painful on pressure; he protrudes his tongue with difficulty; his voice is hoarse, and breathing difficult; lips also more swollen.

29th, 9 o'clock, A. M.—He raved a good deal through the night, is weaker to-day, and prostration very evident; pulse very quick, 160 in the minute, thready and easily obliterated; he is unable to protrude his tongue, his mouth open, lips greatly swollen, and covered with dark crusts, also his teeth and gums; his breathing is short, hurried, and irregular, involuntary discharge from his bowels; forehead and face are more swollen; the sub-mastoid tumour in a state of gangrene, a dark red swelling extending to the sub-maxillary region; the pustules on the side

of the nose and face more prominent and loaded with a cream coloured fluid; small red points have appeared on the side of the abdomen and thigh; the three red pimples on his arm are now fully maturated, and the size of a split bean.

5 o'clock, P. M.—The swelling and redness on the forehead have extended to the scalp, the colour has changed to a deep brown; vesications containing a dark bloody fluid have appeared over the frontal sinuses, and along the side of the nose; the nose is completely closed up with a dark tenacious fluid; the number of pustules have not increased on the body, those that have appeared since yesterday are more prominent, and apparently contain well formed pus; the ankle is less swollen, red, and painful; a patch of redness has appeared on the left one; his pulse is wavering and, difficult to be felt; he is perfectly conscious, and attempts to answer when spoken to.

30th, 8 o'clock, A. M.—No pulse to be felt at the wrist, loud rattles in his throat; perfectly comatose; his head, face, and nose greatly swollen; a very overcoming fetor from his person; the redness and swelling of his ankles have greatly disappeared since yesterday; at 10 o'clock this day he died.

This case presenting symptoms similar to those that I have already described, I was anxious to test the certainty of this disease in the subject of the present case, by inoculating an ass with matter taken from pustules on the side of the face and arm of the unfortunate sufferer. I was fortunate enough in procuring the animal, and had him driven to the patient's cabin, and there inoculated him with the fresh virus from the pustules on the face and arm. On opening the pustules I thought I should have matter on the lancet, in the place of it a clear fluid escaped with a single puncture; with this fluid, so taken, I made a few scratches with the lancet on the nasal mucous membrane of the ass, and when dry ordered the animal to be driven home, and kept in a place of safety until next day.

The Progress of the Disease in the Ass.—On the second evening after inoculation, the animal was observed to be heavy,

breathing quick, and heaving of its flanks also, off its feeding. At this period of the animal's illness great excitement prevailed in a poor and thickly inhabited locality in which the animal was confined. All were in a state of great alarm lest the disease should be communicated to the adjoining families ; the outcry became so general that the house in which the animal was kept was pulled down, and the ass itself about to be destroyed, but for my timely arrival, when I had the animal removed to an enclosure, where I was able to watch the progress and termination of the disease.

April 1st. The third morning since inoculation, the appearance of the ass is as follows: both alæ nasi are swollen, also the upper lip ; tenderness and swelling have taken place in the sub-maxillary region, and difficulty of breathing is caused by slightly grasping the trachea. The respiration is hurried ; increased motion of the intercostal spaces, and drawing up of the abdomen, are observed. When the animal attempts to masticate, a thin, yellowish fluid escapes from its mouth ; deglutition is performed with difficulty.

April 2nd. The animal's nose is more swollen, vesicles containing a thick substance like to gum appear on the edge of the nostril ; the openings of the anterior nares are reduced to a slit-like form, in consequence of the surrounding inflammation and swelling ; the incisions made with the lancet are swollen out, and vesications containing a thin serous fluid are observed on the margin of them ; swelling and tenderness have also increased in the submaxillary region.

April 3rd. The vesications containing a substance like unto hardened gum have given way, and a dark excoriated surface appears in their place. The side of the head and face of the animal are swollen ; it breathes with difficulty ; and a loud tracheal rattle is heard. In the evening, running commenced from the right nostril.

April 4th. At two o'clock this day, on going to see the

animal, we found it had been dead for a few hours. Its head was greatly swollen; discharge from both nostrils; and the alæ nasi presented a dark gangrenous appearance.

REMARKS.

Fever of six or eight days' duration precedes the eruptive stage of this disease. The patient suffers from severe rigors, headach, irritability of stomach, and thirst, lassitude, oppression of strength, and quick pulse. He also particularly complains of severe pain in his limbs and back, and also of stiffness, and heat of his joints. The disease at this early period might be confounded with acute rheumatism, and that it has so been mistaken and mixed up with it cases are not wanting to prove the truth of the assertion. In the fever ushering in the acute form of glanders and farcy, the condition of the skin is remarkable, it has a dry, harsh, burning hot feel, in no instance, that I have observed, has there been any appearance of moisture in this first or premonitory stage. The contrary is usually observed in the fever of acute rheumatism, since perspiration is one of the characteristics of both its early and advanced stages. The appearance of the countenance of the patient in acute glanders is also very remarkable, and indicative of serious organic change, his face is pale, anxious, and depressed, his features are sharp and contracted, there is a peculiar uneasiness and despondency in his manner, as the fever advances, it lapses into one of a low typhoid type; the pulse is small, quick (in one case 160 in the minute), and undulating, the tongue is dry, brown, and tremulous; diarrhœa and involuntary evacuations mark this advanced stage; there is also tremor of the limbs and subsultus, besides raving, low delirium, stupor, and coma. At this second or typhoid stage of the disease, the local characters of glanders and farcy present themselves to our notice, and it appears, that the more profound the prostration, so in proportion the different crops and forms of eruption advance to maturity, not simultaneously, but at each day's visit a fresh

crop is presented to our view. The arrangement of the different forms of eruption I shall next proceed to state.

First. We have inflamed surfaces, varying in extent from two inches to the entire length of a limb, engaging the deeper structures, œdematous, and having an erysipelatous appearance, presenting elevations in parts, and yielding a boggy, inelastic feel on pressure, terminating in complete sphacelus, and giving out an insupportable fœtor.

Secondly. Superficial and subcutaneous pustules, circular or oval in shape, appearing in great numbers and in succession, becoming fully maturated in a few hours, and containing a serous fluid, beneath a white crust of cuticle, without either surrounding redness or swelling.

Thirdly. Small erythematous patches of redness situated over joints, ending in sphacelus; the point of mortification commencing in the centre of a hardened base: diverging from it in all directions, purplish rings are to be observed.

Fourthly. As an advanced symptom and appearing towards the close of the disease, a discharge of yellow, tenacious mucus, changing into one of a dark, sanious character, from one or both nostrils: and,

Lastly. Inflammation of the lymphatics and absorbents is observed to be extensively in the vicinity of, and leading from, the gangrenous pustules.

That glanders and farcy are communicated by contagion from the horse, mule, or ass, to man, I have no doubt, and consider the above cases fully warrant such a conclusion; we find the subjects of the above cases constantly about the diseased animals, and that for some time their business was to clean harness, and feed the animals day and night, also in two instances an attempt at a cure was tried in vain, and by the very persons who afterwards fell victims to this baneful disease; and although it does not appear that any abrasion or sore upon the hand was observed, still, when the habits of the peasantry are considered, their utter carelessness and want of cleanliness, after handling

these animals, a portion of the glandered matter might readily find ingress into the system through the nasal mucous membrane; also, very few of the peasantry are free from fissures in the palms of the hands and fingers, by reason of their hard work, and this also might be another mode of the introduction of the virus of glanders into the system. It will appear also from the history of the above cases, that all indiscriminately do not fall victims to this disease, as in the case of Keegan, whose business it was merely to drive, and make up the diseased horse; his system was infected with the disease, and rapidly sunk under it, and the two persons who were constantly about the horse, applying remedies for its cure, escaped it. Can this disease be communicated from one individual to another by infection? In the detail of the cases, I have been particular in describing the state of the dwelling in which I found my patients residing—close, ill-ventilated cabins, without light or free circulation of air, with a number of persons residing in them, and the patients themselves continuing in the same clothes throughout the disease, in fact, every circumstance was here present to taint and vitiate the atmosphere around the patient; and still no one, of either friend, relative, or nursetender, sickened of the disease; and when the same state and condition of cabins is considered, which facilitates the spread of disease, both of an infectious and contagious origin, as small-pox, &c., and yet in no instance have any one of the numerous friends and relatives about the patients, labouring under acute glanders, taken the disease. I think it may be so far safely conceded from the above facts, that glanders is not an infectious disease, or likely to be communicated from one person labouring under the disease to another. This opinion is also further confirmed by what occurs in the history of the disease in the horse tribe. The majority of the most celebrated veterinary surgeons of the past and present period have declared it as their opinion, that glanders and farcy are diseases imparted by contagion alone, and that early separation of the diseased animals from the healthy, proper care,

and requisite attention to cleanliness, will prevent the spread of the disease in them. Glanders and farcy have been divided into the acute and chronic form. The horses, from which my patients received the contagion of the disease, laboured under the latter form, and it will appear from the history of the cases, that all were some time in constant attendance upon the diseased animals, before becoming tainted with the poison of glanders, a circumstance admitting of an explanation, inasmuch as diseases imparted by contagion may be weeks, even months, dormant in the system, before unfolding themselves to our notice. The disease appears to pass through the human system unaltered, or in any way modified in its characters, in fact retaining its baneful and destructive properties, as is proved by the experiment upon the ass; on the second day it became ill; on the fifth it died. Lastly, in the absence of any therapeutic means of curing, or even alleviating, this so formidable and fatal disease, one in which the records of medicine have not furnished a single instance of recovery, and one also in which the physician is unable to afford an interval of ease, or assuage the most frightful agony that human nature is exposed to; with all these facts before us, and in the humiliating reflection of being merely silent lookers on, and all the resources of our art in this disease futile and useless, we should turn our thoughts to preventive measures, and impress upon the attention of the local authorities in our respective districts, the dangerous and fatal consequences likely to ensue, by allowing glandered horses to exist, or be suffered to go at large.

ART. XV.—*On Prolapsus Ani.* By HENRY M'CORMAC, M.D.

PROCIDENTIA, or prolapsus ani, is a complaint of considerable frequency, both among adults and young persons; principally however, the latter. Some cases are on record, in which small doses of strychnia, it is said, effected a cure; it is, however, an

uncertain and even dangerous remedy, more especially with children. Of late years, a kind of ivory truss adjusted by means of a T bandage, has been introduced into practice; I found it to answer very well in the case of a retired military man. Mr. Hey treated a very obstinate case which had lasted from infancy, and was attended with profuse hæmorrhage and other inconveniences, by removing a pendulous flap, which, to use his own words, "produced a more firm adhesion of the rectum to the surrounding cellular substance." This operation was quite successful, but does not very well apply to cases unattended with a circular flap.

Sabatier and others had recourse to excision of the protruded portion, an operation, however, which may be productive of serious hæmorrhage. These considerations probably led to the operation of Dupuytren; here, the patient being laid on his belly, the pelvis raised by pillows, the thighs seperated, so as to bring the anus in view, the projecting folds, separated by as many sulci, which lead to the anus, are severally laid hold of by a dissecting forceps with large blades, then removed with a pair of curved scissors held in the right hand. If the relaxation prove very considerable, the excision may be prolonged half an inch within the anus; but otherwise a few lines will suffice. This operation, which obviously is attended with little comparative pain or hæmorrhage, evidently remedies the excessive dilatability of the anus, and substitute an accidental, closely-adherent tissue for one that is extremely loose. Patients generally do not go to the water-closet for the first few days; and the operation, it is stated, was successful in every case except one, in which, from the struggles of the child, it could not be properly performed.

As a good many cases of prolapsus ani in children have come under my observation, I was desirous to avail myself of any improvement in the treatment. Strychnia failed in my hands; the cold bath and advance of years were tedious and of uncertain issue. There was one child who had laboured under this

troublesome complaint from about a year old, for it seldom appears to ensue before weaning, till between five and six. Her indisposition had never remitted; protrusion subsisted at every stool, sometimes amounting to an inch or more, had always to be reduced; a procedure attended with some difficulty, and more or less pain. The child had a relaxed aspect, was easily affected in her bowels, and evidently suffered in her general health.

I had tried almost every thing I could think of, sea-bathing and cold aspersions among the rest; and felt unwilling, for after all it is attended with more or less pain, to say nothing of fright and apprehension, to have recourse to Dupuytren's procedure. I had hoped that the relaxation would disappear in the advancing age; but there was no more immediate prospect of this, than there had been some years previously.

Reflecting on the procedure in question, it occurred to me that the same result might in a measure, at least while the child was at stool, be secured by careful manual traction. I immediately stated my views to the intelligent mother; she entered into them at once, and promised, if possible, to carry them into effect. Accordingly, when the child went next to stool, the skin exterior to the anus was drawn to one side by means of the fingers extended around. The little girl submitted to this with some reluctance, and complained that she could not evacuate her bowels. She was encouraged, however; a stool was obtained; from that day and date now a month since, the bowel has not once descended. The stools, which previously were from two to four every day, have become much fewer, as well as of a more formed consistence and natural colour; while the child's health, spirits, and strength, are in other respects much ameliorated. There is now no prospect of the disease ever returning; the little girl requires comparatively little attendance; her mother, in fact, is only required to stand by, and in a short time, it is to be hoped, her onerous and anxious ministry will wholly cease.

As prolapsus ani is a very common affection coming frequently

under the notice of every practitioner, and hitherto most difficult to remedy, this painless and bloodless mode of treatment, which, it is reasonable to suppose, would be equally efficient in other cases, in relieving the sufferings of helpless childhood, and lessening a mother's cares, seems deserving of attention.

Belfast, May, 1843.

ART. XVI.—*Clinical Researches in St. Vincent's Hospital.* By J. M. O'FERRALL, M.R.I.A., Member of the Royal College of Surgeons in Ireland, and First Medical Adviser in Ordinary to St. Vincent's Hospital.

No. I.

ON THE DIAGNOSIS OF CERTAIN VALVULAR DISEASES OF THE HEART.

THE following cases may be considered as representing a greater number of the same kind, too numerous, however, for periodical publication. They are grouped, because they appear calculated to elucidate certain points in valvular diseases, the diagnosis of which, in the present state of our knowledge, is allowed to be unsettled. I am led to believe, that the evidence they contain is capable of lessening the confusion about physical signs, which has induced some pathologists of experience, and whose opinions have a weight, in proportion to their well-earned reputation, to reject them altogether as delusive.

CASE I.—*Shortening of the Mitral Valve, without Contraction of the Orifice; Regurgitation; Bruit with the first Sound.*

Anne Doyle, an unmarried woman, 20 years old, stated that she had rheumatic fever in July, 1836, and that she was then cupped and blistered over the heart. The pains in her knees and feet continued for three or four months afterwards.

About nine months after the fever she observed her feet and legs became swollen, and the swelling extended rapidly to the abdomen, hands, and face. Difficulty of breathing and palpita-

tions preceded the swelling, and are now increased; she has had hæmoptysis from time to time.

She was admitted into St. Vincent's Hospital on the 12th June, 1837;—her condition, then recorded, was as follows: general anasarca; urine scanty, deep coloured, without deposit, and coagulating with nitric acid; bowels confined; frequent cough with mucous expectoration, but no blood in the sputa for the last two months; great dyspnœa; pulse irregular, small, and about 120 in a minute; mucous rales were heard all over the chest, which was moderately clear on percussion; cardiac dulness extended beyond its natural limits; the impulse of the heart was strong, and accompanied by marked vibration to the hand; a loud and rough bruit was heard just below the mamma, and for a short distance, though fainter, to the right of this point; the bruit was systolic; the normal sounds were audible elsewhere.

It is not necessary to the present purpose to detail the treatment in this case. Successful at first, but soon followed by relapse, it involved no new principle, and was adapted to the varying conditions of pectoral distress or weakness, which this poor girl exhibited during the struggle. She was a very patient young woman, and often sat up in her bed, leaning forward on her knees, a whole night, without disturbing the neighbouring patients by a moan.

It is enough to state that the physical signs remained unchanged to the day before her death, when they were last examined.

Autopsy.—General infiltration of the cellular tissue; congestion, with considerable œdema of the lower lobes of the lungs; some fluid in the pleuræ. The pericardium was universally and firmly adherent to the heart; the latter was enlarged; the apex appeared (after some dissection) to be formed by both ventricles in nearly equal proportions. The cavities were enlarged; the parietes of the left hypertrophied, while those of the right were thin in proportion to the cavity.

The anterior lamina of the mitral valve was irregularly thickened by deposit of a cartilaginous consistence under its covering. Its measurement, in the direction towards the aorta, was remarkably shortened. The auricular aperture was patulous, and only crossed by a few thin cordæ tendineæ. The posterior portion of the valve was altered, but in much less degree. The auricular aspect of the opening presented nothing unusual; it was of the ordinary size.

The other valves and openings of the heart were examined with care, and found to be in a healthy state. The liver was congested; the kidneys small, pale, and contained the white deposit described by Dr. Bright. The minute description of these, and other organs, although exceedingly interesting in other points of view, is not so material to the present inquiry.

The remedies which so often restore a patient to the feeling of perfect health, could have produced little, or only temporary benefit in such a combination of renal and cardiac disease.

I could not learn from this young woman, whether mercury had been employed in the rheumatic fever which originated her fatal disease. She had been cupped and blistered over the heart, and I therefore conclude, that pericarditis was detected. She did not remember ever having soreness of the mouth, or salivation.

The first evidence of interruption to the circulation was dyspnœa, with cough and occasional hæmoptysis. It is worthy of remark, that the latter symptom disappeared immediately after the serous infiltration began in the extremities.

The organic lesion was, *inadequacy of the mitral valve*, uncomplicated with even the slightest degree of obstruction in the orifice. The obstacle to the circulation was occasioned solely by the action of the left ventricle, the force of which was misdirected by the faulty condition of the mitral valve.

The physical sign which accompanied this state, namely, *a*

rough systolic bruit, loudest at the extreme left of the cardiac region, was ever present when the chest was examined.

This case was one of common occurrence in the hospital, and the diagnosis was therefore made without reserve. The simplicity of the lesion, and the limitation and constancy of the physical sign, leave little room for doubting their connexion, when associated with the train of general symptoms described. I cannot help thinking that Dr. Addison himself would agree with me, if he examined this case during life, and afterwards inspected the parts.

That there may be no bruit present, and yet the mitral valve be found to be the seat of serious organic change, I am aware, because I cannot easily forget the impression made upon my mind by the following case, which a little reflection, however, enabled me to explain.

Case II.—*Shortening of the Mitral Valve; Bruit de Râpe; progressive Contraction of the Auriculo-ventricular Opening; Bruit removed.*

Ellen Whelan, 43 years old, presented herself for admission on December 13th, 1837. She was induced to come to town by her sister (see Case IV.), who had been in hospital for a similar complaint.

She complained of cough, which destroyed her rest at night; beating at the heart; breathlessness on ascending a hill, or making the least exertion; she had spitting of blood about six months before. Her extremities were swollen, cold, and livid; her face was tumid; the sclerotic conjunctiva elevated by infiltration, and giving the appearance of a watery eye. The pulse small, irregular, intermittent, and counting about 80; the pulsations of the heart were 116, tumultuous and unequal in force. A loud bruit de râpe was audible below the left mamma, it corresponded to the first sound; no bruit elsewhere. Distinct fremissement to the hand laid over this region. Bronchial rales were heard all over the chest, and the base of both lungs sounded comparatively dull on percus-

sion ; the renal secretion was scanty, high coloured, depositing lithates, but without any trace of albumen ; the bowels were alternately relaxed and constipated.

The history of her malady was this : she was exposed to heavy rain while going to market about a year and a half before; she remained several hours in her wet clothes, and the next day complained of shivering, with pains in her limbs, which ended in rheumatic fever. From the latter complaint she continued to suffer, she says, for three months, and never was well since.

Under suitable treatment her bronchitis now subsided, and the swelling disappeared ; the bruit underwent no change. She became uneasy in hospital, and left in twelve days after her admission. She came, however, occasionally with her sister for some time, during which the bruit was never absent.

At length, after an interval of four months, she returned looking very ill. Her complaint then was sore throat, but it was evident that she had lost flesh considerably ; and, on inquiry, it was found that her limbs were swollen to the middle of the thighs ; her face was bloated ; her arms were wasted, and she admitted that she spat blood frequently.

I requested one of the pupils, who had seen her before, to examine her chest. He came to me with pleasure to announce, that her old complaint, at least, was better, for the bruit was gone. On examination, it proved that he was correct in saying the bruit was gone ; although the assemblage of symptoms under which she laboured, too plainly told that the danger of her condition was increased. The heart's action was forcible but unequal, and the pulse had even less correspondence with its rythm than before. The normal sounds of the heart could be both distinguished. I could scarcely detect the existence of the tremor, which had been so perceptible on former occasions. She was offered a place in the hospital, but like most poor people from the country, when they have a presentiment of approaching death, she preferred being with her friends.

From this period to the time of her death, I had her visited

several times at the residence of her sister in Golden Lane, on no occasion, however, was the formerly well-marked bruit to be discovered. It is curious that I was invited to make the post mortem examination in this case, by her sister, whose sufferings, in her own instance, gave her an interest in the investigation. The following is the report of the inspection.

Autopsy.—Body and arms emaciated; legs and thighs, as far as the groin, œdematous; they were of a purplish hue, and presented several gangrenous patches. The state of the brain, as well as of the abdominal viscera, belong to other questions in pathology, and need not be detailed here.

There were two small apoplectic clots, the size of walnuts, in the right lung, and one in the left; the postero-inferior portions of both lungs were gorged with blood and serous fluid; the bronchial lining membrane was vascular, the tubes loaded with mucous; the pleuræ contained about a pint of dark coloured fluid. On opening the pericardium, about four ounces of serous fluid, of a sanguineous tinge, escaped; the upper and posterior portion of the membrane was adherent to the heart; the remainder was free, but perceptibly opaque. The heart was enlarged to nearly double the natural dimensions in a female; the apex was formed by the right ventricle; an incision made through the apex was carried on to near the base, through both ventricles and septum, so as to display their comparative size. Both cavities contained grumous blood, with a small portion of semi-transparent fibrine. When these were washed away, the mitral valve presented a remarkable appearance. There was great thickening and deformity of the anterior or greater lamina. It covered the posterior lamina completely, and by presenting a flat surface to the thin or free border of the latter, shut out all communication with the auricle. The cordæ tendineæ were so much shortened, that their muscles almost reached the free edge of the valve. Both auricle and ventricle contained blood, but not a shred of coagulum connected their contents with each other. The actual dimensions of the anterior por-

tion of the valve was manifestly much lessened in the direction towards the aorta; but the shortening of the cordæ tendineæ, as well as of the posterior lamina, and the very contracted state of the orifice, had brought the latter within the reach of its protection. No vegetations were visible at this side. The aortic aperture, as well as its valves, were natural in every respect.

On clearing out the left auricle, its cavity appeared to be prolonged towards the ventricle, and presented numerous vegetations along the margin of the opening into the ventricle; none of these extended into the fissure. The shape of the opening was that so well described by my friend, Dr. Adams. It was crescentic, and contracted to dimensions so small, that the point of the little finger could not be forced through. The parietes of the auricle were hypertrophied, and had a strong, muscular appearance; the lining membrane was of a yellowish white colour, and its surface was so irregular, as to be in some parts mammellated. The area of its cavity was remarkably augmented. The pulmonary artery was somewhat dilated; the right ventricle enlarged, as well as its auriculo-ventricular opening; its walls were not thicker than usual; the valves of this side of the heart were natural in appearance.

This was the first case in which I was enabled to verify the previous existence, and final disappearance of a bruit in cardiac disease. Both facts were well and satisfactorily established by the observation of others, as well as by my own.

When Whelan first came into the hospital, the diagnosis of disease of the mitral valve with regurgitation was recorded; and the general symptoms of cardiac disease corresponded with this view of the nature and locality of its cause. The difficulty of breathing, and dropsical symptoms, were so much diminished by treatment, that she considered herself well, and returned to her friends, carrying with her, however, the well-marked and ominous physical sign of the disease.

On several occasions, subsequent to her leaving the hospital, she attended the public consultations, and the bruit was ever in same place. At length, after a longer absence than usual, the bruit is found to have disappeared, while her general symptoms and sufferings have undergone considerable aggravation.

At this juncture, I confess my confidence in this physical sign was much shaken, and I was tempted to adopt the conjecture, that regurgitant disease of the mitral valve had never existed in this case, notwithstanding the bruit, and that this murmur had no necessary connexion with that lesion, and had its origin in some other and less permanent cause.

In considering this question, we must, even if we assumed the absence of regurgitation, have admitted the presence of some interference with the circulation, of a nature equally grave and embarrassing. The small and irregular pulse; the palpitations; the dropsy; the dyspnœa, cough, and hæmoptysis,—and all of these showing a constant disposition to relapse;—formed a series of symptoms which indicated progressive disease of the central organ.

Supposing then, that there were some disease of the heart, but that it was not regurgitant disease of the mitral valve, considerable difficulty would be found in explaining the murmur by reference to other valvular lesions. Thus, obstructive disease of the auriculo-ventricular opening, if it produced a bruit, should present it in connexion with the second sound; and contraction of the aortic opening certainly does not occasion the same inequality and irregularity of pulse, or want of correspondence with the rythm of the heart. To this I might add, that the locality of the murmur, and its absence about the root of the aorta, were against this view.

If we assumed that the disease itself had undergone no change, the only other condition of the heart, with which authors have connected the general symptoms alluded to (including the peculiar pulse, permanently existing), is softening of its

muscular substance. Chronic softening of the heart, so well described, though differently explained, by Laennec, Bertin, and Bouilland, is known to produce the peculiar pulse which occurred in this case, and which, together with certain other general symptoms, give it so strong a resemblance to disease of the mitral valve. According to Dr. Hope the diagnosis is easily accomplished. He has stated that this peculiar pulse, when caused by disease of the mitral valve, is always accompanied by the characteristic bruit under the left nipple; while the same pulse, without the occurrence of this murmur, he considered, as clearly owing to softening of the muscular substance of the heart. Whelan's case, as we have already seen, shows that a diagnosis made on this principle would have been erroneous. Perhaps if the case had been seen for the first time, at the period when the bruit had disappeared, such a conjecture would have carried with it an air of probability. I remarked, however, that the action and sounds of the heart were not sufficiently feeble to correspond with softening, and that the previous existence of a murmur rendered it impossible to make a satisfactory diagnosis, from the present state of the case.

These were our reflections during the life-time of the patient. Having now made the inspection, we were in a condition to inquire how far they enabled us to explain the anomalies in this case.

When exhibiting the parts at my clinical lecture in the hospital, I observed, that the points most certain in this case were, 1st, that there had been no bruit for some time before death; and 2ndly, that the mechanism of the parts, as we then saw them, seemed incompatible with regurgitation.

So far the present anatomical characters were in strict accordance with the recently observed physical signs. But as it was equally certain, that a bruit had been previously audible and persistent, the question for solution was, whether the present condition of the parts could have existed at the time when the murmur was heard; or whether our knowledge of the laws of

progression, observed by organic changes in the heart, would justify us in supposing, that a different anatomical relation of the parts had been present at that period.

In the history of endo-carditis,* it is well ascertained, that the left cavities are first attacked, in the greater number of cases; and that in these, the fibrous tissue, included in the mitral or aortic valves, is its primary seat. In my own experience, the free margins of the valve have most frequently presented the tumefaction from interstitial deposit, which constitutes its earliest change, and which I believe precedes the occurrence of vegetations on their surface. But, whether vegetations existed or not, I have reason to think, that the ventricular aspect of the valve is affected long before that which looks towards the auricle, or than the ring of the aperture itself. I have notes of several cases of acute and rapid pericarditis, with well-marked results of endo-carditis, and in none have I witnessed these products of inflammation, in the lining membrane of the right auricle. When this latter cavity becomes diseased, it appears to be the result of long continued morbid action, aided, perhaps, by the habitual distention to which it has been subjected.

If this, then, be the order in which the changes succeed to each other, is it not reasonable to suppose, that shortening of the mitral value most commonly anticipates the contraction of its orifice; and consequently, that regurgitant disease in this part most commonly precedes the phenomena of obstruction.

In Case I. (Doyle) which terminated during the existence of regurgitant disease alone, the fatal issue was obviously hastened by the coincidence of Bright's disease of the kidney. In that case the mitral valve was shortened, but the cordæ tendineæ were lengthened, and the orifice remained of its normal size. Regurgitation, therefore, was inevitable, and the physical sign continued to the last.

In Whelan's case, the valve was also shortened, but further

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* The obscurity which attends the diagnosis of endo-pericarditis is well exemplified by cases in that valuable work, "*Dr. Graves' Clinical Medicine.*"

changes had been superadded. The thickening and shortening had engaged the cordæ tendineæ, and this brought the free edge of the valve closer to the opposite wall of the ventricle. In addition to this, the posterior lamina of the valve had become contracted in a remarkable degree, so as to lessen the diameter of the aperture to be protected.

Considering, therefore, the anatomical configuration of the parts, and the order in which the changes are apt to occur, it was impossible to resist the conclusion, that a different relation of the valve and its aperture had existed, at the period when the murmur was distinctly perceived.

The considerations here offered applied of course to the case of Whelan alone, and I could not venture to believe it an explanation of all the anomalies, with respect to this murmur, which had so discouraged others, until it appeared to gain additional importance by the occurrence of the following case.

Case III.—*Shortening of the Mitral Valve; progressive Contraction of the Orifice; Bruit in the early Stage; Murmur afterwards lost.*

Catherine Kavanagh, 46 years of age, was admitted into St. Vincent's Hospital, 18th October, 1838, labouring under symptoms of morbis cordis. She attributed her complaint to exposure to wet and cold, but had no recollection of having any rheumatic disease. She had been subject to winter coughs for three years, but only felt uneasiness about the heart eight months ago. Since that period she had suffered from palpitations on exercise, considerable difficulty of breathing, continued cough, with mucous expectoration, and on two occasions with copious hæmoptysis; her feet and legs were œdematous; the renal secretion scanty, but free from albumen; her complexion was sallow; her lips purplish; her countenance expressive of suffering; the pulse was irregular, unequal, and small, it counted 84 in some minutes, and rather more in others; occasional intermissions were perceptible. The chest was clear on percussion in front; cardiac dulness preternaturally extensive, and lower than

natural, as well as verging towards the median line; bronchial rales every where audible; the force of the heart was considerable, but unequally so; pulse at the heart 90; fremissement; a distinct bruit de soufflet, rather rough, was heard, just where the apex of the heart struck the finger; it was systolic, and very limited in extent; the natural sounds were audible in other parts of the new cardiac region; the dulness on percussion in the hepatic region was lower than usual.

The diagnosis made was *bronchitis; emphysema; hypertrophy of the heart; regurgitant disease of the left auriculo-ventricular opening.*

Her bowels having been attended to, the renal secretion was in a few days augmented by mercurials and diuretics combined, and marked relief to all her symptoms was experienced. At the end of a week more, the cough and expectoration had nearly ceased; her breathing was more comfortable; the urine had increased in quantity, and was pale, and the œdema nearly gone. At this time the heart had perceptibly ascended in the chest, but the same murmur was still distinctly audible.

Kavenagh went on tolerably well from this time to the latter end of November, the swelling of the feet, and palpitation giving her less trouble than usual. The heart was repeatedly examined, and the bruit de soufflet was always found in its place.

About this time she caught cold, which she attributed to an open window. Acute bronchitis of a very severe character set in, and for many days she was in danger of suffocation. During this period of suspense, the murmur was less distinct, but this was thought to be accountable from the predominance of the mucous and sibilous rales. Her condition soon demanded stimulant expectorants, and under these, and nutritious diet, the bronchitic symptoms began to decline. It was now clearly perceived that the murmur had become fainter, and after a lapse of eight or ten days was altogether lost.

The case of Ellen Whelan quickened our attention to this change in the physical signs, and from this time to January 11th, 1839, when she died, the cardiac region was made the subject

of almost daily examination. The action of the heart became more tumultuous, and less accordant with the pulse at the wrist, but the bruit de soufflet was heard no more. In the early part of January she was attacked with hæmoptysis, with evidence of pulmonary apoplexy in the lower lobe of the right lung. Her dyspnœa now increased; she could not lie down; the urine was scanty; the swellings increased, and she died asphyxiated.

Necropsy.—The right lung contained a large coagulum in the middle of its lower lobe, the remainder was gorged with bloody serum. The left pleura contained more than a pint of red fluid; the base of the lung was œdematous; the lungs in front were emphysematous, and in some degree concealed the actual size of the heart, for it was larger than was even supposed. The pericardium contained about two ounces of reddish serum; no trace of lymph or adhesions; the right ventricle formed the apex of the heart; a section carried through both ventricles and septum, displayed the great size of the right, the walls of which were thin in proportion. The left ventricle contained no blood, it was small and contracted; the aortic opening and valves were sound; the mitral valve was shortened, thickened, and pursed up; the cordæ tendineæ were crowded together, and so much shortened as to be scarcely distinguishable; the anterior lamina of the mitral valve projected beyond the posterior, and concealed it from view. When a probe was introduced behind the former, the two portions of the valve were found to have lain in close opposition, so that the narrow chink of which the auriculo-ventricular opening consisted, could be opened only by their mechanical separation. It was impossible to conceive a regurgitant current with such an arrangement of the parts. The left auricle was dilated, its walls thickened, and its opening semilunar and contracted; a few very small vegetations marked the line of its margins. The valves of the right heart were healthy.

The striking resemblance between this and the former case, as relates to the order of the symptoms during life, gave to the post mortem examination an unusual degree of interest. The

symptoms which succeeded to the disappearance of the bruit were those, rather of increased obstruction, than of mere debility of the organ. The latter view of the case was entertained, but the phenomena did not support it. When the left ventricle, however, was opened, no doubt could remain of the coincidence between absent murmur, and a mechanism incompatible with regurgitation. The only question was, whether the same reasons existed for supposing that, as occurred in Ellen Whelan's case, a regurgitant disease of the mitral opening was superseded by its progressive contraction. Nothing in this case seemed adverse to the supposition, and the most careful comparison of the phenomena convinced me, that the order of the sequences was the same in both.

In Kavenagh's case the change took place, it might be said, under our eyes. It is impossible to say how far it was influenced by the invasion of the bronchitis, but it is not improbable that the inflammatory fever, by which it was accompanied, had some share in hastening the morbid change.

The case which now follows is curious, as an instance of the rheumatic diathesis developed in a second member of the same family, and leading to organic changes in the heart in many respects the same.

Case IV.—*Regurgitant Disease of the Mitral Valve; Bruit de Râpe; Contraction of the Aperture; Disappearance of the Murmur.*

Mary Whelan, a woman about 40 years of age, was admitted into St. Vincent's Hospital on the 19th June, 1836, labouring under rheumatic fever. It was her third attack of the disease, and she had generally been confined to bed six or eight weeks in each.

In addition to the usual fever and appearance of the joints, with which every physician is familiar, this poor woman complained of intense pain in the cardiac region, and such a degree of dyspnœa as made the horizontal posture insupportable. The agony she suffered, from her swollen and powerless joints, was

forgotten, whenever she happened to slip down in the bed, and she never cried so piteously as when she begged to have her shoulders raised again. A harassing cough added to her miseries by shaking her entire frame, and she spat blood or rusty adhesive mucus from time to time. Her face was rather sub-livid than flushed, although her skin was burning hot; her eyes were watery, and the countenance full of anguish; the urine was scanty, red, intensely acid, but not albuminous; her pulse was small, intermitting, and at the rate of about 110. The physical examination of the chest supported the opinion entertained of her danger, from a first view of her case. Extensive dulness in the cardiac region, and extending upwards as high as the level of the second rib, was bounded, at the latter point, by distinct double *bruit de frottement*, while at the proper cardiac region the sounds of the heart were nearly inaudible. A distant murmur could be distinguished beneath the mamma. The chest, posteriorly, was comparatively dull, the right side remarkably so in its two inferior thirds, and affording to the ear a mixture of small and sub-crepitant rales.

In addition to free leeching over the heart (for she could not have endured cupping), I directed colchicum to be administered every half-hour until vomiting was produced, and then a full dose of calomel and opium, 10 grains of the former with 2 of the latter. The dose to be repeated every six hours.

At visiting hour next morning the relief was most remarkable; her countenance was greatly improved; she had several hours' sleep, and the pain and swelling of the joints were considerably diminished; her pulse was more developed, though still intermitting; the sputa were scarcely tinged with blood; the breathing more tranquil, and the dulness posteriorly was more limited. The most important change, however, was observed in the cardiac region; the evidence of liquid effusion was nearly gone; the extent of dulness was diminished; the frottement was audible as far as the nipple, and here, a more deeply seated bruit de râpe could be distinguished.

A few days more placed this poor woman out of immediate danger. The rheumatism disappeared, and the signs of pericarditis also faded away, leaving, however, the bruit de râpe to prove the previous existence of organic disease. No doubt could be entertained of the latter fact, when she stated, that she had constant cough, palpitations, occasional spitting of blood, and swelled ankles, for two years.

She left the hospital in sixteen days afterwards, and feeling herself as well as usual.

In four months from this period she returned to the hospital, not on her own account, but bringing her sister, a woman three years older than herself, whom she had induced to come to town for the relief of symptoms very similar to her own. (See Case II.) The opportunity was not lost. Our old patient's heart was examined, and the same bruit, in the same place, was distinctly audible. She still suffered from palpitation ; she could not ascend the stairs without stopping, and she spat blood whenever she caught cold. Her feet were inclined to swell, but she kept this symptom under, as she informed us, by drinking parsley tea. I heard no more of this patient, until she presented herself, as an external patient, on account of acute bronchitis in March, 1837. The character and situation of the bruit remained as before. The pulse was at first thought to be less frequent, but on comparing it with the heart, it was ascertained, that every second or third beat of the heart was less forcible, and not transmitted to the wrist.

The next interview with Whelan was in August, 1838. Her sister, whose case was much worse than her own, had in the interval been in St. Vincent's Hospital ; had returned home relieved ; had relapsed, and after lingering some time had just died. Naturally anxious to throw light on her own disorder, which so closely resembled her sister's, she now requested me to examine the body of the latter.

On this occasion too, we examined Mary Whelan's heart, and found the murmur under the left mamma unchanged.

The result of this examination has already been detailed.

Sometime after the death of her sister, this woman was again attacked with rheumatism, and placed herself under the care of Mr. Dormer of Bishop-street; she had been some days ill, when at the request of this gentlemen I saw her with him. She had rheumatism of the ankles and wrists; there was no frottement about the heart, but the former bruit was no longer to be found. She recovered from this illness tolerably well, but the murmur did not return. From this time to December, 1838, she called occasionally to the hospital. On every such occasion the chest was carefully examined. No trace of the bruit was to be detected. Her state was, however, daily becoming worse, and at length, after a confinement to bed of three weeks, she died. Mr. Dormer kindly assisted at the post mortem examination.

Necropsy.—The lungs posteriorly were solidified at several points; some of which were deep black, others of a grey colour, as if the colouring matter of the blood had been absorbed; there was not much fluid in the pleuræ. The pericardium was adherent to the heart, except posteriorly, about the base of the left ventricle; a small quantity of reddish fluid occupied this space. A section of the heart and pericardium shewed great apparent thickening, from organized deposit beneath the latter. The right ventricle was very much dilated, and formed the apex of the heart; the whole organ was enlarged to double its natural size, and extended high up in the chest. The left ventricle contained a little dark blood; its interior presented a striking resemblance to those already described; the mitral valve occupied a situation in the cavity, lower down than usual; the cordæ tendineæ were shortened; the two laminæ of the valve were thickened, and adherent at their commissures. Their margins lay in close contact; the anterior projecting a little beyond the posterior laminæ of the valve, so that when the ventricle was filled, the contraction of its parietes must have pressed their edges closely together, no regurgitation could have taken place. The aortic opening and valves were natural. The apparatus of the right heart were also healthy; the

right auriculo-ventricular opening was very large, but I concur in the opinion, that this is not to be regarded as a pathological state. The left auricle was capacious, and its parietes thickened; the aperture depressed, contracted, crescentic, and dotted with small vegetations, which did not, however, extend into the fissure.

When disease of the mitral valve proves fatal, in its earlier or middle stages, the event is generally found to be owing, either to complication with renal, or some other chronic disease (as in Doyle's case), or to one of the many accidents, in the lungs or pleuræ, to which this affection so often leads. Pulmonary apoplexy, pneumonia, bronchitis, or pleurisy, frequently interpose to prevent the completion of the morbid process. I possess the notes of many such cases, well observed during life, and in all of these, the characteristic murmur was present and persistent, to the last.

I have also, in addition to those already detailed, records of two others, in which the previous presence, and subsequent disappearance of bruit de soufflet, was found to coincide with a contraction of the opening so great, that even the shortened valves were rendered capable of preventing a reflux.

The former are a class of cases of rather frequent occurrence, and in which I am led to think, notwithstanding the doubts expressed by Dr. Addison and others, the sign may be considered as established.

The latter are, however, the cases which have created the greatest difficulty; because, being examples of extensive valvular disease, without a trace of abnormal sound, they have appeared to negative all the ordinary rules of cardiac auscultation.

The error has, I conceive, arisen from a hasty or imperfect analysis of the anatomical characters of the lesion, and from assuming, that extensive disease of the valve must necessarily include all the conditions for the production of morbid sound.

The three last cases are examples of disease of the mitral

valve, in the advanced stage of which, no morbid sound was produced. Can we doubt, that if those cases were seen, for the first time in this stage, by those who follow the text of Dr. Hope, that a corresponding diagnosis would have been made, and the existence of valvular disease altogether denied.

I am far from believing the rule to be, that in the advanced stage of disease of the left auriculo-ventricular opening, the phenomena of regurgitation shall cease. On the contrary, I have records of many cases, in which great contraction did not prevent the occurrence of a refluent current through the aperture. But in these cases, the inadequacy of the valve was still apparent, on inspection. I only maintain, that a valve, so shortened as to be incapable of closing the normal opening, may become adequate to its task, in consequence of progressive contraction, *combined with* a favourable adaptation of the aperture itself.

In the cases here related, there is reason to believe that this order of the morbid changes actually obtained; and, therefore, that the apparent anomaly, of a bruit, persistent for a certain time, and then permanently absent, far from proving the fallacy of physical evidence when applied to the diagnosis of valvular disease, is, in reality, only an illustration of the accordance of the phenomena with the changes in the mechanism which produced them.

It will be perceived, that no abnormal sound was produced, in these cases, by the narrowing of the opening. The consideration of this fact, as well as of the causes of that rare occurrence, a diastolic murmur in this situation, may be the subject of another communication.

The facts and observations here adduced may, perhaps, be reduced to the following propositions.

1st. That regurgitant disease of the mitral valve is attended by persistent murmur with the first sound.

2nd. That the subsequent disappearance of this murmur does not lessen the value of the sign, nor contradict the diagnosis, at the time it was made.

3rd. That the order of the phenomena here described, in *combination* with the *general symptoms* of this disease, constitute a rational evidence of the supervention of contraction of the opening, to a degree proportioned to the previous shortening of the valve.

4th. That uncomplicated obstruction of the aperture is not necessarily attended by a murmur.

5th. That the general symptoms of disease of the mitral valve are not to be distinguished from those of *softening*, merely by the presence of murmur, as has been asserted by authors.

6th. That the diagnosis can be made, only, by the observation, that a well-marked systolic murmur had *previously* existed, in *combination* with the *general symptoms* of the disease.

ART. XVII.—*On a peculiar Morbid Affection of the Stomach, characterized by Regurgitation of its Contents, without Nausea.* By SIR HENRY MARSH, Bart., M.D., M.R.I.A., Physician in Ordinary to the Queen in Ireland, President of the College of Physicians,* &c. &c.

THERE are three processes, each very different from the others, by which the stomach is capable of expelling its contents: the first is that which enables the stomach, by the contraction of its muscular fibres, to propel its contents into the duodenum: the second is the act of vomiting—a convulsive movement by which the contents of the stomach are returned along the œsophagus, and rejected through the mouth,—a movement which affects the whole frame, and is preceded by, and accompanied with, nausea: the third is the act of regurgitation, whereby, without nausea, without convulsive effort, the contents of the stomach, gaseous,

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* A paper on this subject was read by Sir H. Marsh at an evening meeting of the College of Physicians, on the 18th March last. The cases which are now recorded, being purely medical, and therefore unsuited to a mixed assembly, were not on that occasion introduced.

liquid, or solid, by a species of anti-peristaltic motion, are expelled.

It is upon this last process that I propose to make a few observations.

The power of regurgitation serves many useful purposes; by it in many animals an important part of the process of digestion is effected, and by it the human stomach is often relieved of an oppressive load in the easiest and least distressing manner: but it sometimes becomes a morbid action, giving rise to a very peculiar and remarkable affection of the stomach.

In reviewing the various families of the animal kingdom, we observe that, in certain instances, regurgitation is a strictly natural and normal process. A vast number of the lower animals, as several species of polypi, the medusæ, and one entire order of entozoa, the sterelmintha of Rudolphi, have but one opening to the alimentary organs; in these animals the superfluous parts of the food are regurgitated, after the nutritious portions have been absorbed in the digestive cavity. Many fishes, as carps, barbels, and pikes, are said to regurgitate habitually the indigestible portions of their prey; and in birds this phenomenon is frequently observed, especially in the Raptores,—as eagles, vultures, and falcons, which reject by the mouth the bones, feathers, and hairs of the animals they have devoured. The power which the breeding pigeon possesses of regurgitating the milky secretion of its crop, for the purpose of nourishing its unfledged young, is a remarkable example of the utility of this natural process. This singular faculty is, however, most strikingly exhibited in the ruminating animals: in them, by the process of regurgitation, the food is returned from the stomach into the mouth, and re-masticated, and thus the digestive function is materially promoted; in these animals it serves a very important and useful purpose.

In man too the act of regurgitation is, in many instances, a normal one, and is the natural means employed to relieve the stomach when oppressed, distended, or overloaded. This is exemplified

during infancy in the process usually termed by nurses "posseting," by which the superabundant portion of the milk, without sickness or apparent distress of any kind, is disgorged, and only so much left as the stomach is fully capable of digesting. The utility of this easy method of discharging a portion of the contents of the stomach is thus in the infant clearly shown. At every age the advantage of this faculty is seen, in the power it gives the stomach of expelling gases, which are either secreted by the vessels of that organ, or extricated during the progress of imperfect or impaired digestion. When a large quantity is extricated, and when it remains pent up in the stomach or intestines, it becomes a source of much distress, often of agonizing pain, and great is the relief obtained, when it is removed by regurgitation. It is a curious fact that the secretion and regurgitation of gas grow by degrees into a habit, and become even a source of pleasure and enjoyment to some individuals. Of this I have met with several remarkable examples in elderly people. I have also noted several cases of persons of the hysteric diathesis, in whom pressure at the epigastrium, or even over remote parts of the body, was immediately followed by gaseous eructations.

The salutary effects of regurgitation are manifested not only in enabling the stomach to relieve itself from distention, when gases are accumulated in it, but also in the removal from that organ of those morbid *fluid* secretions which characterize some forms of dyspepsia. These morbid secretions are readily removed by the act of regurgitation, and thus their irritating and injurious effects, if suffered to descend along the intestinal canal, are prevented. In cardialgia, the acid and acrid fluids, which during disordered digestion are secreted, are in this manner removed, and great temporary relief obtained. There is, however, no disease in which the relief thus procured is more distinctly apparent, than in pyrosis or water-brash. The fluid secretion which constitutes pyrosis,—sometimes resulting from living too exclusively on a particular kind of vegetable food, as

happens in Scotland ; sometimes resulting from a morbid action of the glands of the stomach, and not dependent upon any peculiarity in the food ; and occasionally met with as one of the signs of organic disease of the stomach,—is an affection of very frequent occurrence. The quantity of fluid secreted at one time often amounts to a quart ; the secretion usually takes place when the stomach is empty, and though the fluid be often tasteless and colourless, and, as far as chemical analysis can detect, exempt from irritating ingredients, yet it is productive of much pain,—a pain most speedily relieved by the expulsion of the fluid from the stomach ; this is effected by the act of regurgitation.

The power of regurgitation is not confined to the rejection of gases extricated, or morbid fluids secreted, in the stomach ; by its means, solid matters—portions of the food—are frequently, without nausea, and without distress to the individual, propelled in a direction contrary to the natural one, and returned through the œsophagus into the mouth. Some few persons possess this faculty naturally; they regurgitate, re-masticate, and again swallow their food, and become, in consequence, ruminating animals. In other instances it constitutes the distinct and peculiar disease which it is my purpose to describe.

I knew, many years ago, a remarkable example of rumination in a gentleman, who was a clerk in a bank; he enjoyed good health, lived at his desk, took but little exercise, and dined hurriedly, scarcely allowing himself time to masticate his food. Soon after dinner, portions of food, with little or no effort on his part, ascended into his mouth, were remasticated and again swallowed. In this manner, according to his own account, the whole of the food he had taken underwent this secondary process. It was a source of much enjoyment to him, and he prided himself upon the possession of this novel, but not very enviable, capability.

I was called upon, not long since, to see a boy about fourteen years of age, and was informed by his mother that after every meal he regularly vomited his food, and that in conse-

quence he had lost flesh, looked ill, and caused to his parents much uneasiness and anxiety. Upon examination, I found that there was no real derangement of the health, that his appetite was good, his bowels regular, and that the expression of his countenance did not indicate serious disease. By minute inquiry I ascertained that he did not vomit his food, but that it ascended from the stomach in successive portions, without nausea, without the least convulsive effort, and without any distress whatever to himself. I was present on one occasion whilst he was in the act of regurgitating his food; it was received into a basin; the morsels of meat successively returned had no acid taste, and did not appear to have been acted upon by the gastric juice. This occurred immediately after he had eaten plentifully and with an excellent appetite. The process of regurgitation was not preceded by any sense of distention or repletion; and whilst engaged in the act he talked and laughed as usual. He had acquired the habit, he could not tell how, since he had been sent to school, and it was quite obvious that he made use of it to induce his parents to remove him from school and to restore him to his horses, dogs, and gun. He was taken home, and there was a speedy termination of the supposed vomiting which had so much alarmed his parents.

Sometimes regurgitation of the food without nausea assumes the form of a very distressing and intractable disease, and has been so often confounded with vomiting, that I am quite sure the true nature of such cases has been generally overlooked. I have seen many instances of this affection which were undoubtedly of hysterical origin; of these I shall give briefly a case or two in illustration.

A young lady, aged 16, was brought to my house for advice; her mother informed me that she had been, for many weeks, labouring under a disease of the stomach which had resisted every method of treatment hitherto employed; that shortly after each meal, she vomited the food taken, and in such quantities

that the most serious consequences were apprehended. I found, however, that she had not become emaciated to any considerable extent; that she had not lost her appetite, her spirits, nor her mental energy, neither was there any expression of material ill health in her countenance. I also ascertained that the food came up in successive portions without nausea, and without any convulsive effort; in fact, she regurgitated her food, but did not vomit it. She had suffered from several slight attacks of hysteria, and there was some tenderness upon pressure on each side of the median line of the spine in the dorsal region; her pulse was tranquil, her alvine and uterine functions natural. In the act of regurgitation scarcely any fluid matters came up; it was the solid portion of the food which was returned, and the process commenced about half an hour after each meal. The food thus rejected was described as undigested in appearance, and free from any acid or disagreeable taste. Previously to the act of regurgitation, she felt a sensation of distention and oppression in the stomach, which, upon the rejection of a certain portion of the food was completely relieved; but if, as occasionally happened, she did not regurgitate, the sense of oppression and fulness at the epigastrium was more than usually distressing and prolonged. It was clear, from her statement, that so much only of her food as was necessary to relieve this sense of distention was regurgitated. By a little explanation I was enabled to quiet her mother's apprehensions. I advised that less food should be taken at each meal, that it should be slowly eaten and well masticated; that liquids should be taken as sparingly as possible to avoid distention of the stomach, and that she should remain for a certain time after each meal in the recumbent position; that blisters should be applied at the same time to the pit of the stomach and upon the spine, and that two drops of hydrocyanic acid in infusion of hops, should be given twice a day. She was also directed to use a tepid salt water shower bath about an hour before her dinner daily, and that her pre-

viously sedentary life should be exchanged for a more active one; and particularly that she should take exercise each day on horseback. For fully a month from the time that the blisters were applied, the disease totally disappeared; at the next menstruating period, however, it returned. Her mother then applied the blisters a second time, and with equal success. She was advised to travel; she spent many months in travelling both in England and on the Continent, and returned in excellent health. For two years after her return from the Continent she remained free from the complaint; since then I have not heard of her.

Some years ago, a very remarkable instance of this disease fell under my notice in a young woman, aged 26, who previously to her being affected with this stomach derangement, had suffered successively from almost every variety of hysteria to which the human frame is liable. She had been subject for months to intense headaches of a purely nervous character; on the cessation of these, she was attacked with daily, periodical, convulsive paroxysms—resembling epilepsy—succeeded by obstinate and violent palpitations of the heart, which at one time were supposed to be indicative of organic disease; these gave place to cough of the most distressing and unyielding nature, the paroxysms of which recurred at precisely the same hour each day, and, preserving their periodic character, endured for many months. The cough was loud, ringing, and convulsive, most distressing to the hearers, less so to herself; the persistence of this cough excited serious alarm, as two sisters and a brother had died of tubercular consumption. No trace of morbid action was discoverable in the lungs; the pulse was not accelerated, nor was there any evidence of hectic fever. This cough continued, with very little variation, for upwards of twelve months, and then ceased abruptly. She remained in good health for several months, when, from grief and anxiety of mind, she was seized with nausea and vomiting to such an extent, that scarcely any food could be retained upon the stomach.

After the lapse of about three weeks, the nausea ceased, and the food, instead of being vomited, was regurgitated; few articles of food would remain upon her stomach, and those were by no means such as are usually deemed easiest of digestion. The regurgitation of her food, like all her previous symptoms, exhibited a periodic character; it was preceded by an oppressive sense of fulness and weight at the epigastrium, and this feeling was removed by the ejection of the food. Whilst affected in this manner, the loss of flesh and strength, though considerable, was by no means commensurate with the amount of apparent disease. During the progress of her illness, the spine was occasionally tender on pressure; this symptom was not always present; it was slight in degree, and varied much in position; it existed much more frequently on either side of the spinous processes than on the median line. A variety of treatment was employed; from some of the remedies adopted, the most strikingly beneficial effects resulted; the good, however, was transient; the remedy which was at first so useful soon lost its controlling influence, and it became necessary to turn to other and different methods of endeavouring to subdue the obstinately persisting symptoms. The detraction of a very few ounces of blood by cupping over the stomach, was on two several occasions singularly efficacious; when resorted to a third time it failed. Blisters applied simultaneously at the epigastrium and the spine, checked the symptoms so suddenly and completely, that the patient imagined herself perfectly cured; not so, however; the symptoms all recurred—the repetition of the same remedy was less efficacious, and ultimately it was perfectly inert. The symptoms were mitigated by small, and often repeated doses of morphine, and again by prussic acid, and belladonna. The combination of creasote and morphine in pill, appeared particularly useful. Bark, in the liquid form, was retained upon the stomach, and checked, for a short time, the urgency of the symptoms. Iron, whenever given, even in the minutest doses, produced violent throbbing headach; bismuth was substituted,

but without any perceptibly beneficial effect. The last remedies employed were iced coffee, internally, and crude ice applied externally at the epigastrium; to the former, she herself attributed her cure. The coffee was iced in the house by means of a freezing mixture; she took it in considerable quantity; it was always retained upon the stomach; and whilst taking it, the symptoms gradually abated, until at length they ceased altogether. It may be well to remark, that during the progress of her illness, ices had been frequently given to her, but had always been rejected; they were, however, ices which had been prepared at the confectioners, and were loaded with saccharine matter. She is now, and has remained for upwards of two years, free from any disordered function of the stomach.

This peculiar affection of the stomach was strikingly exhibited in a case which not long since fell under my observation. The patient was a girl between 11 and 12 years of age, stunted in growth, deformed in person, and resembling, in size and appearance, a child of not more than five years of age. I was called upon in haste to see her, and found her labouring under convulsions of the most formidable kind, the paroxysms being of an epileptic character, and recurring in such rapid succession, that for nearly 24 hours, during which the attack lasted, she had a violent paroxysm almost every hour. From this state, contrary to all expectation, she recovered; soon afterwards diarrhœa set in, and continued for several weeks, mitigated, but not permanently controlled by any treatment. The diarrhœa then ceased, and gave place to the daily regurgitation of a large proportion of the food swallowed; occasionally, however, the diarrhœa returned, and the regurgitation for the time ceased. The food was disgorged without unpleasant taste, without sickness, and without muscular effort. Notwithstanding this daily regurgitation, the child, when I last saw her, presented a more healthy aspect, had gained flesh, and appeared in improved health. I have seen several other well-marked instances of the same disease in young children,

but in every instance connected with, and resulting from, innate constitutional delicacy, and co-existing with various disturbances of the nervous system, and derangements of the digestive function. I have seen instances of it in conjunction with chorea. In many cases of hooping-cough, the partial or total evacuation of the stomach, at the close of the paroxysm, is the result, not of the act of vomiting, but of the act of regurgitation, and in such cases, so little is there of sickness or distress connected with the expulsion of the food from the stomach, that we often find the desire for food immediately to return, and children to eat greedily after having apparently vomited; but in many of those cases if the manner in which the food is expelled be closely examined, it will be found that it is accomplished without the effort and the sickness which characterize the act of vomiting. This distinction is of some practical importance, because it stands opposed to a method of treatment which is sometimes adopted,—that of treating hooping-cough principally by emetics. Doubtless, emetics are of use in the treatment of hooping-cough, and especially in such cases as are complicated with severe bronchitis. The frequent termination of the fit of coughing in the rejection of the contents of the stomach, has given rise to the notion, that the treatment by emetics is indicated; but if the manner in which the food is rejected be carefully examined, it will appear, that the practice of treating hooping-cough by exciting nausea cannot, in many instances, be fairly deduced from any natural indication.

So far we have considered this peculiar disease in its connexion with hysteria and other disturbances of the nervous system; we, however, frequently meet with it holding a prominent position amongst many symptoms, which appertain to obstinate and protracted forms of dyspepsia. In the same individual the food is sometimes vomited, and sometimes regurgitated; the contents of the stomach are sometimes rejected *en masse* without nausea or straining, and sometimes discharged morsel after morsel, till the whole of the contents of the stomach be dis-

gorged. The food is in different individuals, and sometimes in the same individnal, regurgitated at various stages of digestion, so that the ejected morsels present every variety of appearance and taste, from that which belongs to food just swallowed, until it be converted into perfect chyme, and mixed with the various morbid secretions which are found in a disordered stomach. Sometimes the act by which food and other matters in the stomach are propelled upwards, is accompanied with so much of nausea, and with so much of convulsive effort, as to give it rather the character of vomiting than of regurgitation, so that in fact it becomes not easy to distinguish the one act from the other. They run imperceptibly into each other, although in extreme cases, no two acts in nature can be more distinct. To illustrate this form of the disease, a case or two of dyspepsia with regurgitation shall be recounted.

Mr. E., ætatis 60, applied to me for advice under the following circumstances. Considerable, progressive, and slow atrophy, accompanied with muscular debility and depression of spirits; a sense of burning heat at the epigastrium, and at the inferior angle of the left scapula; anorexia; irregular bowels, and loaded tongue; skin dry and harsh; unrefreshing sleep; and, as he said himself, frequent vomiting of his food. He was full of uneasiness about his own state; the impression was strongly fixed upon his mind that organic disease of the heart, or some intra-thoracic tumour existed. The closest investigation, however, failed to detect anything abnormal in either the circulating or respiratory functions. He told me that a glass of cold water removed, for a time, the burning feel from the stomach and scapula; also, that occasionally he rejected from the stomach a tasteless fluid, which being got rid of, all sense of burning heat ceased. Upon further inquiry I ascertained, that it was his habit to eat hurriedly, to bolt his food, and, immediately after a meal, to engage in his ordinary occupations. I also learned from him, with some difficulty, that what he called vomiting his food,

really consisted in regurgitation of successive morsels, which he re-masticated and re-swallowed. In this case a cure was speedily effected; the patient was submissive to rules; his mind, which had been most unhappy, was set completely at ease; by a total alteration of his habits of life, with but little more of medicine than was necessary to regulate the bowels, he regained flesh, strength, and spirits.

For the particulars of the following case I am indebted to Dr. Burton, resident clinical clerk in Stevens' Hospital.

Mr. B. ætat. 27, of highly nervous temperament, inheriting a strumous diathesis from maternal side, has been labouring under debility of stomach for nine or ten years. It commenced with acidity, constant heartburn, and offensive eructations; great nervous debility, and continued constipation of bowels. Four or five years since, was in the habit of taking a dessert spoonful of soda two or three times a day to relieve this sensation; about two years since began to perceive his food returning into the mouth without any effort on his part; has been subjected to every kind of treatment by different medical men, without effect; is always better whilst travelling.

When Sir Henry Marsh saw this gentleman the following symptoms presented themselves. Very remarkable emaciation, with pale and haggard countenance, expressive of deep melancholy; great prostration of bodily and mental energy; weakness induced on the slightest exertion; cold extremities; pale tongue and gums; pulse languid; sense of dragging at the epigastrium; no actual pain on pressure. He states that about half an hour after eating, he perceives the food return into the mouth, morsel by morsel (with the taste that it possessed before being swallowed), until nearly the whole meal has been rejected; towards the end it generally becomes bitter. Perfect rest after meals protracts the period at which rejection occurs; the irritability of the stomach is much increased by sour, fat, or bulky fluid food. The appetite is very irregular; sometimes he feels a

great craving for food, at periods when it is not usual to eat—as at night; bowels are very obstinately constipated, with much hemorrhoidal irritation; distressing flatulence, and severe headach.

The treatment in this case consisted, 1st, in the careful regulation of diet, both as to the quantity and quality of the food taken, and of the intervals of time between meals, in the slow and effectual mastication of food, with the diminution of the proportion of liquid matters taken into the stomach, and rest for a certain time after each meal. 2ndly. In the exhibition of carbonate of potash an hour after each meal. 3rdly. In a small permanently discharging blister at the epigastrium. 4thly. In exercise alternately on foot and on horseback, at three different periods of each day, taken periodically without regard to weather, and a considerable interruption to the daily habit of laborious and sedentary occupation.

The improvement of this patient under the foregoing treatment was remarkable. He acquired flesh and strength rapidly, so as to be able to take exercise with increased energy; the depression of spirits has also, in a great measure, disappeared; and the rejection of food has also considerably abated.

The case of A. K., ætatis 38, a physician in extensive practice in a large rural distinct, we shall give as nearly as possible in his own words: his professional duties exposed him to fatigue of body, and anxiety of mind; he was temperate in his habits, and enjoyed, previously to the attack of the disease about to be described, uninterrupted good health. His father and mother, at one period of their lives, had both suffered much from dyspepsia, debility, and great depression of spirits; but as they advanced in life these symptoms passed away, and they are now in the enjoyment of good health.

The illness under which A. K. labours set in suddenly about two years ago, at a time when he was just recovering from an attack of inflammatory sore throat, and when, in consequence of

the prevalence of a very malignant typhus fever, and the charge of a Dispensary and Fever Hospital, his mind was anxious and overwrought. The earliest symptoms of the disease were loss of appetite; incapacity for exertion, both muscular and intellectual; rapid emaciation; disturbed, unrefreshing sleep; great depression of spirits; nervousness, irritability, and impatience; dread of impending evils, particularly of a fatal termination to the disease; the pulse was feeble; the skin cold, with occasional cold sweats, sometimes universal, sometimes affecting the extremities only; the bowels irregular; the urine scanty, reddish, and depositing much sediment. He continued for some weeks in this state, when he began to reject from the stomach, at first with straining and distress, afterwards without the slightest effort, a fluid, varying in quantity from a mouthful at a time to a full pint. This fluid was frothy, glairy, generally white, occasionally brown; its taste was usually acid, but sometimes sweet. The disease has continued, subject to remissions and exacerbations, for two years, and has compelled the patient to intermit, now for the third time, the practice of his profession. His mental distress and sufferings have been sometimes so great as to render life insupportable; the symptoms have been uniformly aggravated by any excess of exertion, either mental or bodily, by long journeys, fatigue, or exhaustion. During repose, and whilst in the recumbent position, his uneasy sensations are greatly alleviated; increased action of the bowels, either spontaneous or artificial, has been always injurious. The patient has not derived benefit from restricting himself to particular articles of food, but has been invariably the worse for even slightly overloading the stomach. His state fluctuates very much; sometimes he feels for days better, and then, without any assignable cause, all his most distressing symptoms recur: his looks also vary greatly; at no time since the commencement of his illness has his tongue been clean, his bowels regular, or the functions of the digestive organs healthily performed; the sympathetic dis-

turbances of the brain and nervous system have also been in a greater or less degree persistent. The patient himself believes that, from a thrilling sensation in the nerves of the stomach, he can trace nervous feelings radiating to different parts; and describes a sudden noise or a loud knock at the door, as affecting him at the epigastrium in an undescribable manner. Dr. A. K., having been now for some weeks exempted from the fatigues and anxieties of professional business, is gradually improving in health; his spirits are less habitually depressed; he has some appetite for food; the tongue is cleaner; and the excretions are assuming a more natural character. Still, however, the essential symptoms of the disease remain, and every day, between three and four hours after dinner, he regurgitates a large quantity of fluid; and, in addition, morsels of meat and other solid food, in an undigested or partially digested state. This act of ejecting the contents of the stomach, is performed without perceptible muscular effort, without nausea, and without any change of colour in the face, or alteration in the countenance, or other indication of sickness. With the other matters much gas likewise escapes. In this manner the epigastric distention and tenderness, the general distress and mental agitation are all, for the time, relieved. From the commencement of his illness to the present time he has never suffered from pain in the stomach. He has latterly been taking creasote made into pill with equal parts of rhubarb and magnesia, apparently with much benefit. He is now travelling about from place to place in quest of health, and has wisely determined upon turning the time thus devoted to this object to an additionally useful purpose. He intends to limit his travels to his native land, and visit and examine every remarkable spa in Ireland; there is reason then to expect that a valuable national work will grow out of this tour of health, and that Dr. K. will be able, not long hence, to resume, with a renovated constitution, his anxious and laborious duties in a large district, where he is so much looked up to and so highly esteemed.

The peculiar disease of the stomach, of which we have now

given several cases, has not, that I know of, been hitherto accurately described; and yet it is one of a very peculiar nature, and requires peculiar and distinct treatment. Cases of this kind are generally confounded with those of vomiting, and hence it happens that it has not obtained a separate consideration.

This affection, as has been already noticed, is, in many instances, one of the innumerable varieties of hysteria; this form of the disease I have met with more frequently than any other. It is oftentimes accompanied with tenderness on pressure on either side of the spine; sometimes it exists alone, but more frequently it co-exists with other hysterical and nervous symptoms. In many of these cases there is a sense of distention and oppression, antecedent to the regurgitation of the food, which is completely relieved by this act. It is usually the solid part of the food which is rejected, and only as much as is necessary to remove the sense of oppression. This form of the disease affects young females principally; it is an affection of the nerves of the stomach, and by no means a dangerous disease, though sometimes obstinately resistant of treatment. It is often preceded by other disturbances of the nervous system, such as intense headachs, and various forms of neuralgia; violent and long continued palpitations; spasmodic cough and dyspnœa; convulsive affections of the muscular system; nervous vomiting and diarrhœa; and seems to take their place and supplant them. In these cases of purely hysterical and neuralgic regurgitation, the treatment I have found most frequently beneficial, consists of small blisters applied simultaneously to the pit of the stomach and to the spine; this, in some few instances, has been at once and permanently effectual; more generally, however, its salutary effects are only temporary; small detractions of blood by cupping in both situations have in some instances been equally successful. Benefit has been derived from small, and often-repeated doses of hydrocyanic acid, belladonna, morphine, stramonium, and other narcotics. Tonics, such as iron, bark, and bismuth, have also occasionally been found useful; but no remedy has been so often successful, in this form of

the disease, as a total change of habits, change of air and scene, and travelling. In one case electricity was completely effectual in curing the complaint; it failed in others. In another instance, a sudden and powerful mental emotion totally and permanently removed the disease.

I have generally found it useful to advise for the patient the recumbent position for an hour or more after each meal; to eat slowly, and to masticate well the food; to eat less than the appetite demands; and to be abstinent in the proportion of fluids, so as to avoid distention of the stomach.

In two instances of pregnancy, I have observed that the sympathetic disturbance of the stomach, which so frequently characterizes that state, assumed this particular form; and much of the food taken in the early part of the day has been expelled, not by vomiting, but by regurgitation without nausea.

In not a few cases of tubercular disease of the lungs, this peculiar affection of the stomach has co-existed.

The regurgitation of the food without nausea is sometimes one of the many symptoms which mark the existence of a very serious affection of the stomach. In such cases the food regurgitated is already partially and imperfectly digested; imparts to the mouth an acrid, bitter, or intensely acid taste, and is accompanied with the constitutional signs of materially impaired assimilation; such as loss of flesh and strength, pallid countenace, depressed spirits, mental misery, diminished muscular and intellectual capability, loaded tongue, loss of appetite, or craving and gnawing at the epigastrium, irregular bowels and morbid excretions, and disturbed and unrefreshing sleep.

This form of the disease is generally traceable to long continued mental anxieties; to over thoughtful, studious, sedentary, and solitary habits, to the swallowing of food hastily without sufficient mastication and insalivation; to the utter neglect of the two most excellent promoters of healthy digestion—cheerful society, and full, free, enjoyable muscular exercise.

In some cases it may be traced to excesses in sexual indul-

gences, and abuses of the sexual propensity. Finally, every violation of the laws of nature, which tends to break down the vital energies, is capable of giving rise to this affection of the stomach.

Of all the predisposing causes, that which is most frequently operative is the existence in the constitution of the strumous diathesis.

One of the most important duties of a physician is to trace morbid actions to their source, as thus, in many instances, the method of cure is at once indicated; and in no form of disease is this truth more strikingly illustrated than in that now under consideration.

ART. XVIII.—*Case of Popliteal Aneurism cured by Pressure upon the Femoral Artery, with Observations.* By O'B. BELLINGHAM, M. D.

JAMES HAYDEN, a servant æt. 32, admitted into St. Vincent's Hospital, March 25th, 1843, under the care of Mr. Bellingham, labouring under popliteal aneurism on the right side.

The tumour is seated high in the popliteal space, it occupies the entire ham, and projects also backwards; it measures three inches in diameter transversely, and a little more from above downwards. On laying the hand upon it a very strong impulse is felt, both posteriorly and laterally. On placing the stethoscope on it a bruit de soufflet, resembling a short but strong whiff, is heard. On making pressure on the femoral artery, all pulsation in the tumour ceases, and on continuing the pressure, it diminishes, and can be completely emptied.

The patient states that his attention was attracted to it about three months ago, in consequence of his feeling a weakness in the limb on coming down stairs; the following day he perceived a tumour in the ham, but he did not observe any pulsation in it at that time; a week afterwards when in bed, he felt a pulsation which has continued since. Subsequently he has suffered from some

degree of stiffness and weakness of the knee, which he attributed to rheumatism. Within the last four or five days the ankle has become swollen, the veins of the leg are also slightly varicose. He complains of a feeling of numbness down the back of the leg to the ankle, and he says he suffers some pain when he extends the limb in bed. The disease, however, has not much interfered with the motions of the limb; indeed he fancied he was better after exercise, and he had walked to the hospital.

He has no recollection of ever straining the limb, or receiving any injury in the part; he is an inside servant, and has never been employed about horses. His general health is very good, the circulation is tranquil, and the heart's action natural and regular; he never was in the habit of drinking, never took mercury. He cannot refer the disease to any cause, and had applied at the hospital on the day of his admission merely to get something to rub to the limb, under the impression that he laboured under rheumatism of the part.

In consultation upon the case with Drs. Cusack and Hutton, it was determined to give a trial to pressure upon the artery above the tumour, and Mr. Cusack, having kindly placed at my disposal Sir Philip Crampton's apparatus, which had been successfully employed by him, in a recent case at Stevens' hospital, one similar to it was constructed by Mr. Millikin.

April 3rd. The instrument was applied this day, the pad was placed upon the artery as it passes over the ramus of the pubis, and on the screw being tightened the pulsation in the aneurismal tumour ceased; in a minute or two it returned, and the screw was again tightened; this happened several times; in from five to ten minutes the limb presented a slight dusky colour throughout; the patient complained of a feeling of cold in both lower extremities, which probably depended upon the exposure. After a short time the collateral circulation became evidently increased, and the vessels enlarged; the circumflex ilii and the epigastric artery could be felt beating strongly under the finger; the discoloration of the integuments ceased, but the entire limb appeared to

be somewhat swollen. He began soon to complain of the pressure of the straps by which the apparatus had been secured above the pelvis, and I was obliged to loosen them. Subsequently it was found that the slightest movements of the patient were sufficient to disturb the pad, and thus remove the pressure from the artery. Although intelligent pupils remained beside him during the day and night, he could not bear sufficient pressure to stop the pulsation in the tumour for more than a few minutes at a time. The apparatus was consequently removed altogether the following morning; the skin at the part acted on by the pad had became red and painful; he felt also a sensation of numbness along the front of the thigh, the limb from the hip downwards was evidently larger than its fellow, and no impression appeared to have been made upon the aneurismal tumour.

During the application of the compression the patient was always enabled to tell from his own sensations when the pulsation in the aneurism was checked; and in applying the apparatus, and endeavouring to maintain the pressure, I had the advantage of Mr. Daly's assistance, who had superintended its employment in Mr. Cusack's case at Stevens' hospital, and had improved the construction of the instrument used by him.

April 6th. The limb having recovered its natural appearance, and the redness and swelling having subsided in the situation in which the pad had pressed, the improved apparatus, constructed by Mr. Millikin, Surgical Instrument Maker, of Grafton-street, was applied. The application of the compression commenced about half-past eleven o'clock; the same phenomena were observed as upon the former occasion; the limb very soon presented a dusky tinge throughout, and became somewhat swollen; the pressure caused at first little pain, subsequently it increased; the anterior part of the thigh felt numbed as far as the knee, the superficial veins became enlarged, and the limb colder than its fellow; the patient then was less able to tell by his feelings when the circulation through the aneurismal tumour

was checked. In the motions of the patient the pad shifted its position, and increased pressure only caused him more pain. He remained upon his back, however, until nearly six o'clock, P. M., when, no longer able to bear the pain, he turned for relief on the affected side, and was agreeably surprised to find that the pulsation in the aneurism was checked, without almost any inconvenience to him, the pad merely compressing the artery against the ramus of the pubis, and diminishing, without completely obstructing, the current of blood through it. As he suffered little or no pain, he did not move from this position until about half-past twelve o'clock at night, when he changed it a little; and on loosening the screw to replace the pad, he found that all pulsation in the tumour had ceased; he re-applied it, however, and remained perfectly quiet until about four o'clock, when he had a call to stool; and on removing the pad, he found that the pulsation had not returned.

At nine o'clock, A. M., April 7th, he was visited, up to which time he had continued the application of the same degree of pressure; and on loosening the screw completely, no pulsation could be detected in the tumour, which felt solid, smaller than before, and hard: the limb had recovered its natural temperature, the feeling of numbness had disappeared, and the swelling in a great measure subsided. He was directed to remain perfectly at rest, and to continue the gentle pressure as before, the amount of which he was allowed to regulate by his own feelings.

8th. The patient has remained perfectly at rest, and has continued (without any inconvenience to himself) the application of gentle pressure, just sufficient to diminish the amount of the current of blood through the femoral artery, the pulsation of which can be felt while the pad is applied from the pubis to the origin of the anastomotica magna. The tumour in the ham is smaller, more solid, and does not yield the slightest impulse.

11th. The apparatus was removed altogether to-day. It had been left on for the last two days, rather to compel the patient to remain quiet in the recumbent posture, than with a view to

keep up compression. The tumour in the ham appears to be about the size of a small orange; it has a solid, hard, and rounded feel. The patient has now none of those uneasy sensations in the limb which he formerly complained of. The vessels which carry on the collateral circulation are enlarged; the pulsation of the articular arteries about the knee is evident to the eye; the pulsation in the femoral artery is lost from the lower edge of the opening of the triceps, above which it appears to preserve nearly its natural strength and fulness.

It may be necessary to mention, that the patient was bled, and during the treatment was kept upon low diet. In order further to quiet the circulation, he was prescribed a mixture, containing a small quantity of the tinctures of digitalis and hyoscyamus.

April 22nd. The patient has not been allowed to leave his bed; the tumour is smaller and harder, about the size and shape of a small egg; he has no uneasiness of any kind in the limb, and can bend and extend it freely. The pulsation of the femoral artery is felt as low down as the tendon of the triceps; no pulsation can be detected in the anterior tibial artery on the dorsum of the foot; but, as in Mr. Hutton's case, a small artery can be felt running over the surface of the tumour towards the calf of the leg. The patient's general health is perfectly good, and he has been allowed full diet for the last week.

The further progress of the case may be detailed in a few words. The patient was not permitted to leave his bed for another month, or until about the middle of May; during which time a combination of camphorated mercurial ointment and hydriodate of potass ointment (as suggested by Dr. O'Beirne) was rubbed upon the ham. On beginning to move about, he complained of pain in the ball of the great toe, and subsequently the ankle upon the affected side became slightly œdematous towards evening.

June 15th. The patient has been up now for some time, and has been kept in the hospital rather to test the permanence of

the cure, than from any necessity. The tumour in the ham is very small, and he feels no uneasiness of any kind in the limb.

The length of time during which pressure was applied in this case, until all pulsation in the aneurism ceased on unscrewing the pad, was little more than eight hours. The instrument was first placed upon the limb, at about half-past eleven o'clock, A. M., and the pressure continued until six, P. M.; during which time the pulsation was checked for not more than two hours, and this at intervals only of a few minutes at a time. From six o'clock to twelve o'clock steady pressure was kept up, and during the whole of this period the pulsation in the ham was checked; the current of blood, however, through the femoral artery, was not altogether obstructed; its pulsation could still be detected by the finger. After half-past twelve o'clock, the tumour no longer pulsated on the removal of the pressure; but, as the details of the case show, the compression was continued as a matter of prudence for a much longer period.

I have not taken into account the compression exercised by the apparatus first employed, as, on its removal, it was found not to have made the slightest impression upon the tumour; though no doubt it contributed, during the short intervals at which it acted, to bring about the enlargement of the vessels which carry on the collateral circulation.

The instrument employed upon the present occasion consists of a hollow splint, well padded, and of sufficient size to receive the nates and upper part of the thigh of the side upon which we intend to make pressure, and sufficiently long to reach from the crest of the ileum behind to the middle of the thigh. From the upper and outer edge of this splint, a strong steel strap passes upwards, then inwards and downwards, over the anterior superior spinous process of the ileum, until it meets another steel strap from the lower and inner side of the splint, to which the latter is attached by a screw, which permits of its being shortened or lengthened; at the situation where the two steel straps meet, the lower is fitted with a slide and the upper has a hinge;

in addition there is a sliding box, slow tourniquet screw, and pad, with a sliding bar to prevent lateral motion. To the upper and inner edge of the splint a strong spring is attached, which embraces the opposite side of the pelvis, and is continued into a soft strap which passes over the abdomen and secures it above; while below a soft strap passes round the middle third of the thigh.

The principles of the construction of this instrument are the same as in Sir Philip Crampton's; it differs in the larger size of the back splint, which permits the whole of the nates and upper part of the thigh of the affected side to rest in it; also in having a strong spring, which comes round from the opposite side of the pelvis, by both of which the instrument is rendered more secure. In addition, the outer steel strap, in consequence of the greater length of the back splint, comes off at a higher point, which permits of the pressure being more accurately applied to the femoral artery, as it passes over the horizontal ramus of the pubis. The pad, tourniquet screw, sliding box, and sliding bar do not differ from the same parts in Sir Philip Crampton's instrument.

I have suggested a further modification of this instrument to Mr. Millikin, which consists in having the back splint of sufficient size to receive both nates and the upper part of both thighs; the steel strap in which the pad is received, and by which pressure is applied, to come from the opposite side of the pelvis. Such an instrument would answer for applying pressure to the upper part of either femoral artery.

OBSERVATIONS.

When we look back, at the present day, to the surgical treatment of aneurism, and particularly of popliteal aneurism, previous to the introduction of the Hunterian operation, we can easily recognize the causes of the general failure of the treatment pursued; and we can have no difficulty in understanding why surgeons, such as Pott, recommended amputation in preference to the only operation then known, which consisted in

laying open the tumour, searching for the vessel which supplied it, and tying both ends of it. We can also readily comprehend the cause of the unwillingness of the surgeons of that period to undertake such an operation, which could not fail of being exceedingly tedious, difficult, and sometimes impracticable, and in spontaneous aneurism must have been generally unsuccessful.

These were the circumstances, in fact, which led surgeons originally to attempt the cure of aneurism by compression. Since the time of Hunter, however, the surgical treatment of aneurism has been so much simplified, that, as his views came to be generally adopted, and his mode of operation to be generally practised, pressure in the treatment of aneurism had but few advocates, and its application seems, with a few exceptions, to have been limited to cases, in which the patient, from timidity, or other cause, refused to submit to the operation of placing a ligature upon the vessel supplying the aneurismal tumour.

In the early application of compression in the treatment of aneurism, the pressure was applied immediately upon the tumour, and the entire limb was at the same time usually compressed by means of a bandage; the patient, in addition, was in general submitted to the medical treatment of aneurism known as Valsalva's; that is, perfect rest in the horizontal posture, very low diet, and frequent bloodletting. Guattani, a surgeon of Rome, in the last century, appears to have been one of the first who put this method into practice to any extent; he treated fifteen cases of popliteal aneurism by pressure, and was successful in four of them. Several of Guattani's cases have been referred to by John Bell in his valuable work on surgery. This treatment was, however, very tedious and painful, lasting many months, and when it failed (which it frequently did) was usually followed by unpleasant consequences, such as the more rapid increase of the aneurism, or its quicker progress to the surface. This method of applying compression has been in a great measure abandoned by surgeons in aneurism of the larger arteries. It is often, how-

ever, successfully applied to aneurism at the bend of the arm, following bloodletting, and other forms of traumatic aneurism, as well as to aneurism of the smaller arteries, such as the temporal, radial, &c.

The application of pressure to the vessel between the aneurism and the heart, with the view of either completely or partially obstructing the passage of blood through it, appears to be a much more recent practice. In the second volume of the Dict. des Sciences Medicales, Richerand has related perhaps the earliest case of the kind: it was that of a grocer in Paris, the subject of popliteal aneurism, who, by preserving the recumbent posture for twelve months, restricting himself to a low diet, with a bleeding once a month, and at the same time compressing the artery in the thigh by means of an instrument constructed on the same principle as a truss, was perfectly cured. In the third volume of the Lecons Orales, two cases of popliteal aneurism are related, in which compression was successfully employed at the Hotel Dieu by Dupuytren; in one the pulsation ceased in about three weeks; the apparatus employed was a semicircle of steel, with a concave cushion at one extremity, and a pad at the other, capable of being moved by a spring and screw; it is commonly known as Dupuytren's compressor. Dupuytren had recourse to pressure only, because the patient refused to submit to operation. He never appears to have employed this method subsequently; indeed he looked upon these two successful cases as the result of some happy chance which might occur once or twice in the course of a long practice, rather than as the effect of a proceeding worthy of being adopted and recommended; it being well known that in several instances popliteal aneurism has undergone a spontaneous cure after the patient had been admitted into hospital for the purpose of undergoing operation. Two cases of this kind occurred some years since at the Meath hospital, where a bandage had been simply placed round the limb, which could have produced little or no pressure, and was not intended to act in that way. More recently another case

occurred to Dr. Brunker in the Louth Infirmary, the details of which have been given in the Medical Press.

In the eighth volume of the Medical and Physical Journal, Sir Astley Cooper has described an instrument for compressing the femoral artery, which was employed in one case of popliteal aneurism by Sir William Blizard; although the patient possessed unusual fortitude, he was not able to bear the pressure longer than nine hours. A similar apparatus is mentioned by Sir Philip Crampton in a communication contained in one of the early volumes of the Medico-Chirurgical Transactions, to have been tried in a case of popliteal aneurism, in which he afterwards assisted the late Mr. Dease to operate, but no force that could be borne was sufficient to stop the pulsation in the ham. Mr. Samuel Cooper has given a description of it in his Surgical Dictionary, and adds, that "few patients can endure the pressure of such instruments for a quarter of the time which Sir William Blizard's patient was able to bear it, when put on sufficiently tight to afford any chance of obliterating the artery; and on account of the suffering they occasion they are rarely used by modern surgeons."

A very ingenious instrument for compressing the femoral artery was subsequently invented by Mr. L'Estrange, and employed with success by Sir Philip Crampton and Mr. M. Collis at the Meath Hospital, in some cases where secondary hemorrhage occurred after the operation of tying the femoral artery. The late Mr. Todd, some years ago, successfully applied compression (by an instrument different from any of those alluded to) in one case of popliteal aneurism; it was also used with success, though under most unfavourable circumstances, by Mr. M'Coy, in a case of femoral aneurism, which he brought before the Surgical Society at a late meeting. I am not aware that this instrument was subsequently tried.

No attempts to cure popliteal aneurism by pressure appear to have been made again, until Mr. Hutton was induced to revive the practice; indeed all the modern works on surgery rather

discourage any such attempts. This seems to have resulted partly from the imperfect construction of the instruments employed hitherto, partly from a mistaken theory respecting the mode in which pressure acted, or from ignorance of the exact amount of pressure required. Thus, surgical writers appear to have been under the impression, that in order to cure an aneurism by compressing the artery above the tumour, it was essential to interrupt completely the current of blood through the vessel; in fact, to apply such pressure as would act like a ligature, cause inflammation of the coats of the artery at the part, and obliterate the circulation in the vessel at the point to which compression had been applied. Thus, Mr. Gibson of Philadelphia, in his work on surgery, observes, "compression is now rarely resorted to, experience having proved its general inefficacy. The process has been found, moreover, even when successful, so extremely painful and tedious that few patients can be induced to submit to it, or to persevere sufficiently long to accomplish a cure. That it operates, partly upon the principle of the ligature (when it does succeed), there can be no doubt; by compressing the sides of the vessel, causing the effusion of lymph, and finally, obliteration of the channel, so as to force the blood to abandon the sac, and pass off by the collateral branches." Mr. Guthrie, in his work on aneurism, says, "the application of pressure by means of a spring pad, has been tried. and has sometimes, though very rarely, succeeded. The process is long and pain great, and there is danger of the part sloughing; the pain, indeed, is so great, that few persons can be persuaded to submit to it; and those surgeons who have tried it once, will not again put it in competition with the operation. Mr. White, his colleague in the Westminster Hospital, employed it successfully in a case of popliteal aneurism in a female. The patient bore the pain heroically for five days, but the parts compressed sloughed deeply." Mr. Guthrie adds, "that he watched the progress of the case with great attention, and that

he would not be easily induced to employ Mr. White's instrument, or any other, for such a purpose."

When it was considered absolutely necessary for the success of compression, that such an amount of pressure should be applied as was almost certain to produce sloughing of the part, and very certain to occasion intense pain and suffering to the patient; and when, in addition, this was to be prolonged through five successive nights and days; we can readily understand why patients refused to submit to it; and we can easily account for the disrepute into which the practice fell, and for the unwillingness of surgeons to adopt this treatment, in preference to the simple operation of placing a ligature upon the femoral artery. It would however appear, that it is not at all essential, that the circulation through the vessel leading to the aneurism should be completely checked; it may, perhaps, be advantageous at first, for a short period, by which the collateral circulation will be more certainly established; but the result of this case, if it does no more, establishes the fact, that a partial current through an aneurismal sac will lead to the deposition of fibrine in its interior, and cause it to be filled and obstructed, so as no longer to permit of the passage of blood through it. Pressure, in order completely to obstruct the circulation in an artery, must necessarily be slower in curing an aneurism, as it must in some measure act, by causing obliteration of the vessel at the part to which the pressure has been applied; whereas a partial current through the sac enables the fibrine to be readily entangled in the parietes of the sac, in the first instance, and this goes on increasing, until it becomes filled; the collateral branches having been previously enlarged, the circulation is readily carried on through them.

It appears to me, that in resorting to compression in popliteal aneurism, with the view of causing the sac to be filled up by fibrine, we should never neglect the accessory measures, known as Valsalva's plan of treatment, which alone have been sufficient to effect the cure of aneurisms of large size. In fact, I look upon bleeding and low diet as material aids in bringing

about the cure by pressure. Bleeding will cause the blood to coagulate more rapidly, but it may be said that it will also have the effect of hurrying the circulation; we have, however, in digitalis, a very efficient means of diminishing the frequency of the action of the heart and arteries, and of quieting the circulation, when the patient is kept in the horizontal posture; and if we take into account the condition of the vessels when the amount of the circulating fluid is diminished, we shall find that the sac of the aneurism is placed in a very favourable position for entangling the fibrin, which, if it continues to be deposited, will ultimately lead to the obliteration of the sac, and the cure of the aneurism.

The application of well regulated pressure, then, in the treatment of popliteal aneurism, combined with the other measures to which I have alluded, must be regarded as a considerable improvement in surgery; the operation of tying the femoral artery is perhaps the least successful of that on any of the larger arteries, "in consequence of secondary hemorrhage on the one hand, and phlebitis on the other, so frequently resulting." And when, within a short period, three cases have occurred in succession in different hospitals, and under the care of different surgeons, it is not too much to expect (from the improvement which has been effected in the construction of an instrument for the purpose), that the necessity for performing this operation will, in future, be much diminished. This result, however, must depend upon the trial of compression in a larger number of cases, though its success in these offers great encouragement to surgeons to attempt it, inasmuch as the difficulties which hitherto surrounded it have been in a great measure overcome; and the correct theory of the mode of action of pressure, and of the amount of compression required for the success of its application, have been I think pretty nearly established.

BIBLIOGRAPHIC NOTICES.

Clinical Midwifery, with the Histories of 400 *Cases of difficult Labour.* By Robert Lee, M. D., London.

Whether Dr. Lee's conclusion, that "the first principles of operative midwifery have not yet been established, and that there is no other branch of surgery in such a rude condition," be strictly correct, or not, nothing is more true than that the great bulk of practitioners seem quite ignorant of any such principles in "esse" or in "posse," or we should not have such melancholy instances of mischievous interference as we find recorded.

That general rules may be laid down with sufficient accuracy and minuteness to guide the practitioner in the treatment of the many difficult cases he meets, we have no doubt, even though it may be impossible to include every case specifically; and for this purpose the essential conditions are ample and accurate reports of cases, an enlarged personal experience, quick tact, and a reflective mind. Now from what we know of Dr. Lee's writings, we give him full credit for these qualifications, and, therefore, we are disposed to receive gladly his contribution to clinical midwifery. His object in the work before us appears to be to show the use and abuse of midwifery operations, and in this he has fully succeeded, recording with a rare candour success and failure; but we greatly regret that, probably from an anxiety not to overload his book, he has given so few general rules or conclusions of his own, leaving each man to the guidance of his own judgment. The cases from which "the first principles of operative midwifery" may be developed, he has given, but he has not thought it well to lay down those "first principles," except incidentally, and as men in the hurry of practice have little time for generalization, this omission must be allowed to lessen the value of the book.

The book consists of eight reports; on the Forceps, Craniotomy, the Induction of premature Labour, Malpresentations, Uterine Hæmorrhage, Retention of the Placenta, and Convulsions.

It is not our intention to enter at present into a detailed analysis of these various subjects; it will be more profitable and more illustrative of the instruction the volume affords, to lay down a few general rules, and quote some of the cases which best illustrate them. Let us take the forceps, about which there seems greater uncertainty and wider variations in practice.

The form and mode of acting of this useful instrument point out as clearly as possible the nature of the aid afforded by it.

1. It is primarily and chiefly a substitute for defective uterine power, enabling us to withdraw the child which the uterus is unable to expel. So far, the only condition required is that there be sufficient room for the child to pass.

2. It is also clear that a certain amount of compression may be exerted upon the child's head, but then it must not be beyond a certain point, or the child will be destroyed, which would defeat our object in preferring this instrument to the crotchet; and, moreover, under this amount of compression, the head of the child enclosed in the instrument must be able to pass without injury to the mother.

Thus the forceps enables us to apply extractive force, if there be space enough to secure both mother and child from injury. We use them expressly to save the child, if we can do so without damaging the mother, but reject them, if, in order to save the child, we must necessarily injure the mother.

If these laws be borne in mind, it will not be difficult to point out the circumstances (or the principal ones) in which the instrument may or may not be used.

Let us now examine the cases in which it would *not* be right to employ the forceps.

1. When the pains, though feeble, still advance the head, and when the favourable condition of the patient will justify a longer trial of the natural powers.

"On the 18th July, 1835, I was called to a case of protracted labour by Mr. Harding, in which the head of the child had been in the cavity of the pelvis for six or eight hours without advancing; the os uteri was fully dilated; the pains were strong and regular; the left ear was behind the symphisis pubis; the blades were easily passed, and locked, and with very little force the head was extracted without any mark or injury. It was alive. Great hæmorrhage followed, but she recovered, and probably would have done quite as well without the forceps."—*Case* 23, p. 18.

"On the 14th January, 1841, in the St. Mary-le-bone Infirmary, a woman, aged 30, had been twenty-four hours in labour. The head was pressing on the perineum; there had been no progress for some hours, and as the gentleman in attendance seemed impatient of delay

I applied the forceps, and easily extracted the child alive. But the operation being unnecessary was unjustifiable, and ought not to have been performed on the ground above stated."—*Case* 47, p. 28.

2. When the passage is so narrow that the head of the child is detained above the brim, or impacted in the cavity, the use of the forceps should not be attempted, because the amount of compression necessary would probably destroy the child, and the force required for extraction may seriously injure the mother.

"In the autumn of 1834 I was called to deliver this patient in her third labour. She was on this occasion attended by two young and inexperienced accoucheurs, and she had neglected to inform them of what had occurred in her two previous labours. Before I saw her, the ergot of rye had been liberally administered, and repeated attempts had been made to deliver her with the forceps, the blades of which had lacerated the vagina extensively on the left side. The vagina and external parts enormously swollen and inflamed. The head was so fast wedged in the brim of the pelvis, that it was difficult to pass the finger around it. The abdomen was tense and painful on pressure, and the bladder filled with urine. The pulse extremely rapid and feeble. There was incessant vomiting, and complete exhaustion. I immediately opened the head, and extracted it with the crotchet, but she died in a few hours."—*Case* 8, p. 10.

On the 21st September, 1836, at 3 P. M., I saw a patient, aged 25, in the St. Mary-le-bone Infirmary, who had been in labour forty-six hours. Since midnight the head had remained stationary. The os uteri was fully dilated. The greater part of the head had passed through the brim of the pelvis. An ear was felt. I applied the forceps, but the head would not move, though I used much force, and for a considerable time. After perforation, the head was extracted with difficulty, with the craniotomy forceps. No bad effect followed." —*Case* 29, p. 20.

"In the month of December, 1838, a woman, aged 24, was admitted into St. George's Hospital, who had been delivered of her first child nine weeks before. The perineum, recto-vaginal septum for about an inch and a half, and sphineter ani were all destroyed, and the power of retaining the contents of the rectum entirely lost. This wretched state had resulted from laceration and sloughing of the parts, from the employment of the forceps in her first labour, and immense force exerted to extract the head. The child was dead."—*Case* 37, p. 23.

3. The forceps cannot be safely used before the os uteri is fully dilated.

"On the 8th of July, 1839, I saw a woman, aged 37, who had been in labour with her first child about fifty hours. The os uteri was not fully dilated, and it was thick and rigid, and was pressed down with the head through the brim of the pelvis. Pulse 60.

Tongue loaded. The pains were strong and regular, but did not cause the head to advance. An attempt had been made to deliver with the forceps, but only one blade could be introduced. Four hours after, complete exhaustion. Perforation and extraction difficult."—*Case* 39, p. 24.

4. The propriety of using the forceps when the vagina is hot and tender, and the head has been long fixed in the pelvis, is at least doubtful, as the consequences which follow their successful application may be serious.

"A lady, aged 37, at the full period of her first pregnancy, under the care of Dr. G—— first began to experience labour pains at 6 A. M. of the 9th of May, 1840. The labour continued during the whole day and night, and during the following day, till 6 P. M. The head of the child was then in the pelvis, and was much elongated and swollen. An ear was felt behind the symphisis pubis. The pains had for some hours been gradually becoming more and more feeble, and had ceased to press the head forward. The discharge from the vagina was offensive; the vagina hot and tender. The meconium escaping. The catheter required. No delirium. Dr. G—— had applied the forceps, but finding much difficulty in locking the blades, had withdrawn them, and was of opinion, when we met in consultation, that it would be right to perforate without delay. Believing the child to be alive, I applied the forceps, and extracted the head in a few minutes, with less than half the force I had employed in many of the preceding cases. The cord was firmly twisted round the neck of the child, *and it was dead.* Inflammation and sloughing of the vagina followed, and the canal was afterwards nearly closed up by the cicatrice. This was overcome by bougies, and she became pregnant, and has since been safely delivered by Dr. G—— of a living child, without any artificial help whatever."—*Case* 45, p. 27; also *Case* 17.

Of the conditions already named as counter-indicating the operation, there can be no second opinion: there are other states which may admit of a doubt, as in convulsions, (Case 43), tumours in the pelvis, (Case 38), and undilated perineum, (Case 51), and which must be treated in a great measure according to the judgment of the practitioner at the time.

On the other hand, the class of cases to which the forceps is peculiarly applicable, is that, in which the first stage being completed, and the pelvis roomy, the pains are ineffective, or at least, so slow in their effects, that the patient is threatened with the bad symptoms of a prolonged second stage (powerless labour). In such cases, the patient may be delivered by the forceps, almost always without injury, and the child saved, if alive at the time. At the same time, if we have reason, from repeated examinations with the stethoscope, and from the cessation of its movements, to believe the child dead, and the soft parts be

rigid, as in first labours, it will often be more prudent to use the perforator.

In justice to Dr. Lee, we select the following cases, as illustrative of the judicious use of the instrument:

"On the 22nd of July, 1839, Mr. Webster, of Connaught Terrace, requested me to see Mrs. H——, who had been in labour thirty hours with her second child. A great part of the head was in the cavity of the pelvis, and an ear could readily be felt behind the symphisis pubis. The head had not advanced for many hours, and the pains, which had been declining in strength, had no effect in pressing it forward. The bones overlapped one another, and there was a large tumour of the scalp formed. The meconium was passing. It was evident the head would never be expelled by the natural efforts, and we determined to use the forceps, the blades of which were introduced and locked without much difficulty, and the head easily extracted. The child was alive, and the mother recovered in the most favourable manner."—*Case* 42, p. 25.

"Mr. Jordan, of Lower Belgrave-street, &c., on the 10th of April, 1838, at 11 P. M., requested me to see a private patient, who had been unusually long in labour, in consequence of the face of the child presenting. The head had not advanced for eight or ten hours. The face was much swollen. There was not the slightest probability that the labour would ever be completed without artificial assistance. The forceps were applied, and the child soon extracted, alive, and without injury. The mother recovered favourably. It is impossible for a case to occur, in which the employment of the forceps can be attended with more satisfactory results. Without the forceps, the life of the child must have been destroyed, and the labour could not have been completed."—*Case* 33, p. 22.

"August, 1836, I saw a case of puerperal convulsions in the lying-in ward of the St. Mary-le-bone Infirmary. The patient had been long in labour, and had experienced fourteen severe fits. The head being sufficiently low, and the parts dilated, I applied the forceps, and delivered with great ease, but the child was dead. She had only one slight fit after delivery, and no bad effect followed the use of the forceps."—*Case* 27, p. 19.

At the conclusion of this first Report, Dr. Lee remarks:

"Five of the mothers whose cases have now been related, died from puerperal convulsions, and four from the rash and inconsiderate use of the forceps. Seven had the perineum more or less injured, one the recto-vaginal septum torn; five were left with cicatrices of the vagina, after sloughing, and one with an incurable vesico-vaginal fistula. In none did any benefit result from the instrument before the greater part of the head of the child had passed through the brim of the pelvis, and the orifice of the uterus was fully dilated. In one case only was the employment of the forceps advantageous, where the blades were applied and locked with great difficulty, and great force

required to extract the head of the child. Seventeen of the children were born alive, and lived.

"In protracted labours, when the head has made no sensible advance for hours, and becomes compressed, the scalp puffy and swollen, the vagina hot, dry, and tender, the discharges offensive, and when the bladder cannot be emptied without the catheter, it is dangerous to trust longer to the natural efforts. If, along with these symptoms, there are tenderness of the abdomen, fear, incoherence, restlessness, and exhaustion, delaying long to deliver is invariably followed by the most injurious consequences."

We have occupied the reader's attention with the first Report so long, that we must, at least for the present, defer the consideration of the others; but we have done so advisedly, because we hoped by so elaborate an analysis to show the value of the cases recorded in the volume, and to supply a brief comment, or rather a guide to those who may study it. The other reports require more or less of the same sort of classification, and to those who will take the trouble thus to read the book for themselves, it will be found a most valuable treasury of information. We do not always agree with Dr. Lee's practical opinions, but no one can deny him the credit of great sagacity, and a candour and honesty almost bordering upon imprudence.

Lectures on the Eruptive Fevers. By George Gregory, M.D.

The author informs us that "The following short course of Lectures on the Eruptive Fevers, was delivered in the theatre of St. Thomas's Hospital, between the 18th of January and the 8th of February, 1843. It was thought that the experience which twenty years of official connexion with the Small-pox and Vaccination Hospital had given to the author, might contribute something towards that extended and improved system of medical education, now pursued in that School." The work before us contains eleven lectures on these diseases, and may be considered as containing the result of the author's experience both of the nature and best mode of treating eruptive fevers. There are, however, many views introduced through the work, in the accuracy of which we are not disposed to coincide.

We shall extract some passages from the lecture on Scarlatina, and detail the line of practice he adopts and recommends. At page 126, he says:

"It is very common to see the cellular membrane, especially that of the neck, taking on a kind of inflammatory action. The fingers stiffen; the neck swells; the parotid glands enlarge; the jaws are with difficulty opened."

And again, at page 133, he says:

"When there has been serious anginose affection, the cellular membrane of the neck will often take on inflammation. Erysipelatous redness of the neck, with great hardness and swelling, are perceived. The cellular tissue sloughs, and this sloughing, if extensive, brings life into hazard. On the 15th December, 1842, I attended with Mr. Squibb, a child who died in this state, with accompanying coma, who had struggled successfully through the first period of the disease. Suppuration of the cellular membrane of the neck is often so extensive that long and deep incisions into the neck are required, to afford the necessary vent to the sloughs. I once saw abscesses extend to the body of the parotid gland."

Surely this is a very meagre description of the frightful complication under consideration. The reader could hardly obtain from it an accurate idea of that form of disease, so graphically described by Drs. Graves and Osbrey, in their account of the scarlatina lately epidemic in this city.*

Dr. Gregory next alludes to the condition of the mucous membrane of the nose, palate, and larynx, but as his descriptions of these affections are almost as short as that of the inflammatory swelling of the neck, we shall pass on to where he speaks of the other sequelæ of scarlatina.

"Scarlatinal dropsy may assume any of the usual forms—anasarca, ascites, hydro-thorax:—anasarca is infinitely the most common, perhaps in the proportion of three to one. Sometimes the three are associated. We may then rest assured that the heart has become implicated in the course of the disorder, and that some serious impediment to the free course of the blood exists within or about the heart, probably a deposition of lymph about one or more of the valves of the heart, which careful auscultation will detect. These cases may nearly be despaired of. I have seen simple ascites succeeding scarlatina depending upon inflammation of the peritoneal covering of the liver, and yielding to leeches and saline purgatives."—p. 135.

It would have been very satisfactory, had Dr. Gregory indicated more accurately the particular form of cardiac disease, to which we may assuredly refer the presence of ascites, or hydrothorax, and the particular signs by which he says we may "on careful auscultation detect" it.

Is this *all* that the experience of twenty years, and ample

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* As Dr. Graves' description of scarlatina was first published many years ago in the *London Medical Gazette*, and subsequently in his celebrated work on Clinical Medicine, along with Dr. Osbrey's, there is no excuse for Dr. Gregory's omitting even an allusion to these writers, particularly as his book abounds in quotations, references, &c., to English writers on the subject.

opportunities, have taught Dr. Gregory of this frequent, and, in so many instances, fatal sequela of scarlatina?

Dr. Gregory's treatment of scarlatina may be summed up in a few words:

"*Bleeding*, both generally and locally. PURGING.—Purgatives," he says, "are now largely and most beneficially used in every stage of scarlatina anginosa, from the first onset of fever to the close of the desquamation. I know of no objection whatever to their use, and am most confident of their great utility. The forms of medicine I would recommend to you are *calomel and jalap*, calomel and rhubarb, senna and salts, jalap and cream of tartar, senna with cream of tartar, castor oil, and occasionally the combination of calomel, James's powder. and extract of colocynth."—p. 158.

Stimulants and tonics are also recommended in cases requiring them.

Dr. Gregory has given rather better descriptions of the other exanthematic diseases, but, upon the whole, we see little to commend in the manner of elucidating what is already well known, and have failed in finding any new or original views of the nature of the diseases he has had such opportunities for observing.

Austria; its Literary, Scientific, and Medical Institutions, with Notes upon the present State of Science, and Guide to the Hospitals and Sanatory Establishments of Vienna. By W. R. WILDE, M. R. I. A., Licentiate of the Royal College of Surgeons, Ireland, &c., &c.

THE author, in his preface, informs us of the circumstances which led to its appearance; he says:

"I know of no better reason for the presentation of the following little work to the public, than the simple relation of the circumstances under which it originated. In the years 1840 and 1841, I visited the most celebrated medical schools of the continent, and particularly those of Germany, chiefly for the purpose of improving my knowledge of ophthalmic and aural surgery; the high and ancient reputation of Vienna, with respect to the former subject, led me thither, and the advantages it offered upon this and many other details of medical science, were such as induced me to remain there during the greater portion of my foreign sojourn.

"Previously to my departure from this country, I anxiously sought information upon the medical, literary, and general scientific institutions of Austria, and eagerly inquired after some guide book to the hospitals of Vienna, but I could find none; and strange to say, nearly the same disappointment awaited me and several other foreigners

in the imperial city. Having become acquainted with many valuable facts connected with the government of the medical profession in this part of Germany, and witnessed many practically useful modes of instruction, and moreover observing the very many splendid institutions and asylums which exist there—the majority of which are comparatively unknown in Great Britain—I resolved upon collecting material for a 'Hand Book,' to supply this defect in German as well as English literature. Other works on that country, and its capital in particular, of general literary interest, have not long since been brought before the public eye; some minute in the details of government, local and general; industry, statistics, and population, &c.; others, highly descriptive of life and manners among the various grades of society in this harlequin city; graphic in their pictures of amusement, the *cuisine*, or the toilette, but as such they are, as might be expected, devoid of information upon the majority of subjects treated in this volume.

"The difficulty of obtaining accurate information on any matter connected with state policy, is greater in the Austrian empire than (Russia not excepted) any where else in Europe. The same caution observed by the state in prohibiting the introduction of foreign publications exists also, to a certain degree, in preventing strangers (especially if their object is an openly avowed one) from acquiring information in the usual manner in which it is to be had in other countries; and those native works that at all enter upon such topics, are either written under the awe of censorship, or the favour of government protection; I therefore briefly mention here some of the sources from which I have derived information. For much of the history, constitution, and expenses of the different hospitals of Vienna, I am indebted, as a matter of reference, to the work of Knolz, the Protomedicus of Lower Austria—'*Wiens Humanitäts und Heilanstalten*, 1840,' which appeared during my stay in Vienna. The critiques and observations on each hospital and institution I wrote on the spot, and generally they are the result of several visits; the special statistics of these establishments I either received from competent persons connected with the institutions, or from scattered notices in the Austrian medical periodicals; and the general statistics are abridged from '*Springer's Statistik des Oesterreichischen Kaiserstaates*,' with occasional references to Bournolli, and other writers upon that subject. With regard to education, I have consulted the different manuals and curricula of the universities, as the '*Taschenbuch der Wiener K. K. Universität für das Jahr* 1841;' '*Vorlesungen welche sowohl ordentlich als ausserordentlich an der K. K. Universität zu Wien im Studienjahr*, 1840 *und* 1841, &c.;' and also '*De L'instruction Publique en Autriche, par un Diplomate étranger, qui a longtemps résidé dans ce pays*, 1841,' a work replete with the most valuable information; and '*Pharmaceutische Novellen von Mart. S. Ehrmann*, 1838.' Mr. James's book on the educational institutions of Germany, published in 1835, does not include the school system of Austria;

and the same remark applies to Mr. Lee's 'Observations on the Medical Institutions of the Continent.'

"For the early history of the School of Medicine I have chiefly consulted the work of Hecker, '*Geschichte der neueren Heilkunde.—Zweites Buch. Die Wiener Schule*, 1839;' and also the writings of Professors Rosas and Beer. To inform myself upon the laws that regulate the medical constitution of Austria, I have carefully perused the '*Darstellung der Medicinal Verfassung in den K. K. Staaten Oesterreichs von J. J. Knolz*,' visiting, at the same time, those different grades and conditions of the profession, and becoming personally acquainted with those sanatory enactments to which he refers; and I have also examined the comparison between the French and German schools, lately published by Dr. C. A. Wunderlich, '*Wien und Paris. Ein Beitrag zur Geschichte und Beurtheilung der gegenwärtigen Heilkunde in Deutschland und Frankreich*, 1841.'

"Several of the societies and institutions of Vienna, as the *Gewerb-Vereins*—and *Landwirthschafts Gesellschaft*, &c., kindly supplied me with copies of their statutes and proceedings; nothing is therefore set down in the usual travellers' note of 'taking it for granted,' or upon mere hearsay, but every subject treated of has been specially and minutely inquired into.

"The only reference to the Viennese school that I am aware of in English print, appeared in two articles written by Dr. Mackenzie, of Glasgow, in 1818 and 1819, in 'The Quarterly Journal of Foreign Medicine and Surgery,' which existed at that time. In order to make my description more intelligible, as well as to serve as a guide to the visitor, I have added a ground-plan of the great General Hospital of Vienna. The object of this volume is therefore two-fold: to the medical and general scientific reader in this country, it will, I trust, afford much useful information on topics of considerable importance, not hitherto inquired into, with respect to the state of medicine, the arrangement of hospitals and sanatory institutions, and the admirable system of education and *clinique* in a large portion of Europe."

The first part of the work is occupied with an accurate account of the system of national education pursued in Austria, and ought to be carefully perused, not only by the professional reader, but by every one interested in that most important question, viz., the best mode of instructing the lower orders of this country. It will be observed, from the following extracts, that religious instruction has been carefully prescribed by the government, as an essential in the course of education adapted for every rank in society, and that a study of it is not left to the option of the student or his guardians, but is made *compulsory* on him:

"Before we commence the description of the different universities and the school of physic, the more immediate and legitimate subjects

of this work, some observations upon the state of general literary and popular national education in the Austrian empire at large may not be unsuited to the subject on which we are now about to enter.

"At the present moment, there is no topic of greater interest than that of public instruction; and though, with reference to it, Austria is somewhat inferior to her Prussian neighbour, yet the system pursued in the former country is well worthy of an attentive examination. How well this system is arranged, and with what skill it is conducted, is a source of natural wonder and admiration to the foreigner, who finds, upon inquiry, that among a population exceeding twenty-four millions and a half (not including Hungary), there are no less than 30,320 public national schools, with 2,338,985 pupils in actual attendance upon them: and this admiration is heightened, when he reflects not only upon the vast territorial extent of this immense country, but upon the apparently discordant elements of which it is composed, and the variety of nations and tongues—their different habits, peculiarities, customs, religions, and manners—that are all brought under the benign influence of one great system of national instruction. Here we have the great *Sclavonic* nation, composed of the once-powerful kingdom of Bohemia, a part of the ill-fated Poland, the great province of Moravia, the ancient territories of Styria and Illyria, the rude military frontier of Dalmatia, the southern countries of Carynthia and Carniola, and all Hungary; the *Rheinish*, or true German nation, consisting of the two arch-duchies of Upper and Lower Austria, the Tyrol, and a small portion of nearly all the other states; and lastly, the *Italian*, who inhabit the Lombardo-Venetian kingdom, and a part of the Tyrol; besides some *Wallachian* people, half-Christian, half-Mahommedan, resident in Transylvania and on the Turkish borders;—all these, variable as the climes under which they are placed, from the hyperborean regions of Russia to the warm Liburnian villas and sunny cities of the Adriatic—Catholics and Calvinists, Lutherans, Greeks, Jews, and Unitarians—all receive the same description of popular instruction, merely varied to suit the language or the religious tenets of each particular nation or country. In Austria, education is compulsory: it is not left to the option of the parent, as to whether he will or will not instruct his child, for he is compelled to send him, when of a certain age, to the national school of his parish; and the many disadvantages under which the uneducated labour are too many, and the laws against them too strictly enforced, to permit of general ignorance, even in the most distant country parts. All children, from five to thirteen, both males and females, come under what is called the '*school age*,' and the description of education they are to receive is strictly defined, so that all, from the simple agricultural peasant to the highest university professor, must pursue the path of instruction in the manner marked out by the state. This, however, is not without its disadvantages; for, though the instruction is general, yet the plan is one so conducive to the caste-continuing system, after the manner of the Chinese

and ancient Egyptians, that it is opposed not only to political reformation, but also to the steady progress of civilization itself, and the rapid development of the resources, both mental and commercial, that should have taken place in this empire during the present long peace with which it has been favoured.

"The measures taken to enforce instruction among the lower orders are so much dependent upon the state of religion, and so mixed up with the local government of the country, that their details would occupy more space than would be necessary to the present introduction. Suffice it to say, that accurate registries of all the children who have arrived at the '*school age*' are kept by the curate and churchwarden of the parish, who, with the local executive, take means to insure an attendance.

"Public instruction in Austria is divided into the popular or national, the intermediate, and the superior. The popular consists of that afforded at the elementary national schools, *Trivialschulen;* the superior primary schools, *Hauptschulen;* and the *Wiederholungsschulen*, or repetition-schools, for persons above the age of twelve years, analogous to the *Ecoles de Perfectionnement* of France.

"Between this last and the next class there are a number of very admirably-constructed seminaries for the purpose of teaching the useful arts, and giving special instruction in particular trades—the schools of utility, *Ecoles Usuelles*, denominated in Austria *Realschulen.*

"The intermediate instruction is acquired in the gymnasiums, lyceums, and faculties or academies of different kinds; and the superior education is that attained in the universities.

"The elementary schools are essentially parochial, and are generally situated in the villages. The pupils attending these schools are divided into two classes—the first class, which continues for two years, is instructed in the catechism of their Church, and the first elements of writing and cyphering; the second class continues the religious instruction of the former year, the writing and cyphering, and add to it the elements of orthography, reading, and writing from dictation; the Lancasterian system being that adopted in all the national schools of Austria. The masters are generally the churchwardens of the parish: there is an assistant to each school, who teaches the girls in a separate room, and also two supernumeraries, with a distinct chamber for the instruction of the very young children.* The curé of the parish superintends the religious instruction,

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* "As yet there is no national system of infant schools in Austria. My esteemed friend, Mr. Werthheimer, has, after a long struggle with the prejudices of the clergy, who violently opposed his benevolent efforts, ostensibly on account of his Jewish faith, at last succeeded in establishing an infant school in Vienna. It is one well worth visiting, and is founded on the principle of those in Great Britain, where singing and amusement, &c., are made the instruments of instruction. The master of this school is one of the most benevolent, kind hearted individuals I ever met; and by a system of culinary economy that an Austrian alone could pursue, manages to supply each child with a comfortable dinner for about a kreutzer (less than a half-penny) a day; but it is much to be regretted, that in so extensive a

and in general each division of the school contains about twenty-four children. In the larger towns and more populous districts, the male and female schools are distinct; in those where all are taught together, the younger children attend in the mornings in winter and the afternoons in summer. The school-hours are five in summer—that is to say, three hours before mid-day for the second class, and two hours after mid-day for the first; and in winter the first class attends for two hours before twelve o'clock, and the second for three hours after it.

"In the chief towns there is, likewise, a better grade of distinct female schools, for the children of the middling classes (*für gebildete Stände*), where they are taught needlework and such other useful arts. All the elementary and primary schools are under the direction and control of the clergy. The great principle laid down in the code of public instruction in Austria is thus expressed in the French work from which I quote:—'Dans les ecoles élémentaires des petites villes, il n'y a que la méthode d'enseigner les objets prescrits pour les écoles de village qui doit être plus appropriée aux besoins d'instruction de ces classes qui ont déjà plus de fortune, plus de contact avec les habitans des grandes villes, et plus d'affaires et de relations industrielles et commerciales.'*

"The superior Primary Schools, *Hauptschulen*, are, as their name implies, of a higher grade, and are distributed over a wider area or district. Children are received into these schools at eight years of age, and the course of instruction delivered there carries them on from that acquired in the elementary schools into the third and fourth classes of general instruction.

"The third class continued for two years, and is educated in the gospels and a repetition of the second class instruction delivered in the primary school, German grammar, and the elements of Latin, to fit the pupils (if necessary) for admission into the gymnasiums. The fourth class is composed of two divisions, a year being spent in each; in the first division the education consists of religious instruction, arithmetic, geometry, the elements of architecture, grammar, writing and dictation, and Austrian geography. In addition to the above,

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city as Vienna, no *general* plan of infant instruction has yet been adopted. There are at present six infant schools, containing eight hundred and fifty-six children, in the entire city and suburbs. The great advantage of such schools, not only to the children themselves, but to their mothers and guardians, is now two well known to require recommendation or praise."

* "'*De l'Instruction Publique en Autriche, par un Diplomate étranger qui a long-temps résidé dans ce pays.*' It has been stated in a late number of the *British and Foreign Quarterly Review*, that 'the schools are altogether the weakest side of Austria, and their present organization is the work of a man who long enjoyed the confidence, and cruelly abused the weakness of the late emperor.' But although the works of Springer and Becher, to which this quotation refers, are not sufficiently explicit upon this portion of the internal arrangement of Austria, yet that to which I have just referred, and whose sources of information are of undoubted authenticity, is, perhaps, one of the most complete works upon the statistics of public instruction in any language or of any country in Europe."

the second division of the fourth class receives instruction in the elements of mensuration and mechanics, the higher branches of calculation and arithmetic, foreign geography, and the principles of physics, and natural history.

" Where the funds for public instruction permit, there is a *music school* attached to each of the last-mentioned institutions :—' Singing being a part of the elementary education imparted, and a most beneficial portion, because it harmonises the mind, affords an innocent amusement for unemployed hours, and is a bond of union in humble societies.'*

" There is one model or *normal school* in the capital of each province, for the purpose of educating the masters of all the national schools.

" Those interested in the subject of national education should visit the normal school of St. Anne, at 980 Anna Gasse in Vienna, which was established by the Empress Maria Theresa, as a model for all the other schools in her dominions.

" The *Wiederholungsschulen* were established for persons above the school age (those who have attained the thirteenth year), and are intended both as a repetition school for such as have passed through the schools already described, as well as for those who have, from circumstances, been unable to attend them.

" To ascend from an inferior to a superior school, it is necessary to produce a certificate of morality and literary proficiency, from the religious instructor and the schoolmaster. Public semestral examinations are held in all the schools in the empire. On the whole, except Prussia, Austria possesses the best system of national education of any continental country; and the number who can read and write, and are acquainted with the elements of arithmetic among the lower orders, far exceeds the same relative proportion of the peasantry in the most enlightened parts of Great Britain. General education is, moreover, progressing rapidly in Austria; and although the law that precludes the right of marriage to the uneducated has, no doubt, produced much immorality, yet that law is daily becoming a dead letter, from the necessity for its execution no longer existing.

" Whatever may be the disabilities under which the middle and higher classes labour in that country, and their name is Legion, the poor and the working classes have their wants well supplied; they sigh not for a state of political liberty, of which they know nothing; and the government, wisely preventing their minds from being inflamed by those blisters upon society, that have written and preached the same classes of our countrymen into the fever of discontent and disaffection, the effects of which are now so visible in Great Britain, has beneath its extended rule some of the happiest and most contented peasantry in Europe.

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† " ' Germany; the Spirit of her Literature and Social Condition.' By B. Hawkins, M. D. 8vo. Parker. London: 1839."

"Manufacturers and the principals of factories are, for the most part, forbidden to employ children under ten years of age, and if the work is of that nature which requires them to be under this age, then the employer is obliged to allow them a certain portion of each day for the purposes of instruction. Altogether, the moral and physical condition of the children employed in Austrian manufactories is, with some trifling exceptions, too insignificant for notice in this general sketch, of a much higher caste than in those in England or France. The education acquired in the schools I have now described is entirely *gratuitous*.

"The Roman Catholic, as the national religion, is that taught in the schools of Austria, but dissenters from this form of faith are neither excluded nor separated; nor are they required to engage in the religious services or peculiar ecclesiastical learning in these schools. In the Roman Catholic schools, the Jews as well as the Protestants, and other dissenters, arrive one hour after, and leave one hour before the other pupils; these two hours being occupied with religious services and instruction, such as was attempted in this country some years ago. There are other non-catholic schools, particularly in Transylvania and the military frontier, Gallicia, Moravia, and Silesia, Bohemia and Carynthia, amounting to 2037 primary schools, whose religious instruction is in accordance with the creed of these countries; the oversight of which is committed to the clergy of each particular denomination. Jews are admitted to the Roman Catholic schools on the same terms as the Protestant Lutherans, Calvinists, Unitarians, or other dissenters; they receive religious and moralinstruction from an authorized work, the *Bene-zion*, which is principally taken from the Old Testament. Where a sufficiency of this people exists, schools have been specially established for their use." —pp. 1–10.

Mr. W. here gives a very full statistical table of the state of education in Austria in 1838, which our limits will not admit of being laid before the reader; and we are compelled, for the same reason, to pass over his valuable chapters on the origin of the school of medicine at Vienna, &c. At page 39 he gives an account of the course of medical education, which, at this particular period, is possessed of more than ordinary interest:

"The medical faculty is governed by a director, Dr. J. N. Ritter von Raimann, a dean, two vice-directors, a senior, and the *procurateurs* of the students of the four academic nations—the Austrian, the Sclavonian and Rheinish, the Hungarian, and the Italio-Illyrian, which also includes the Saxon. There are sixteen ordinary and nine extraordinary professors, besides the assistants of the different cliniques and museums, &c. The course is as follows:

	COURSE.	SUBJECT.	PROFESSOR.	HOUR.	FREQUENCY IN THE WEEK.
First Year.	First Semester.	Introduction to the Medical Studies and Mineralogy	Dr. C. Fischer.	10—11	5 times.
		Anatomy	Dr. Joseph Berres.	9—10	do.
		Zoology	Dr. C. Fischer.	10—11	do.
		Botany	Dr. S. Endlicher.	7½—8½	do.
	Second Semester.	Anatomy	Dr. Joseph Berres.	9—10	do.
		Anatomical Dissections	. . . . .	. . . . .	. . . .
Second Year.	First Semester.	Anatomy and Physiology (in Latin) . .	Dr. J. Czermak.	10—11	do.
		General Chemistry . .	Dr. Ad. Pleischl.	11—1	do.
	Second Semester.	Anatomy and Physiology	Dr. J. Czermak.	10—11	do.
		Pharmacy	Dr. Ad. Pleischl.	11—1	do.
Third Year.	First Semester.	General Pathology and Etiology (in Latin) .	Dr. S. Töltenyi.	3—4	Daily.
		Materia Medica et Chirurgica, Therapea, Diatetic, and the Art of Prescribing (in Latin)	Dr. S. Töltenyi.	8—9 & 3—4	do.
		Theory of Midwifery (in the Krankenhaus)	Dr. John Klein.	12—1	5 times.
	Second Semester.	Contagious Diseases of Animals,—in Veterinerary Institute . .	Dr. Ant. Hayne.	5¼—6¼	3 times.
Fourth Year.	First Semester.	Medical Clinique (in the Krankenhaus) .	Dr. Hildenbrand.	8—9	Daily.
		Special Therapea for Internal Diseases . .	do.	9—10	5 times.
		Surgical Clinique . .	Dr. Wattmann.	10—11	Daily.
		Surgical Operations .	do.	11—12	5 times.
	Second Semester.	Medical Clinique . .	Dr. Hildenbrand.	11—12	do.
		Therapea, as above . .	do.	9—10	do.
		Surgical Clinique . .	Dr. Wattmann.	10—11	Daily.
		Special Surgical Pathology	do.	11—12	5 times.
Fifth Year.	First Semester.	Medical Clinique . .	Dr. Hildenbrand.	8—9	Daily.
		Special Therapea for Internal Diseases .	do.	9—10	5 times.
		Ophthalmic Clinique .	Dr. Rosas.	10—11	Daily.
		Ophthalmic Science .	do.	11—12	5 times.
		Legal Medicine . . .	Dr. Joseph Brent.	12—1	do.
		Exercise in Judiciary Dissections	do.		
	Second Semester.	Medical Clinique . .	Dr. Hildenbrand.	8—9	Daily.
		Special Therapea for Internal Diseases . .	do.	9—10	5 times.
		Ophthalmic Clinique .	Dr. Rosas.	10—11	Daily.
		Ophthalmic Surgery .	do.	11—12	5 times.
		Medical Police . . .	Dr. Joseph Brent.	7—8	do.
		Judiciary Dissections .	do.		

"The education acquired in this—the higher branches of study (*Studium der Arzneikunde und höhern Wundarzneikunst*)—requires five years, and none are permitted to attend the lectures upon these subjects but those who have obtained at the final examinations of their philosophical studies a certificate of first class in all the obligatory course. They only are eligible to become doctors of medicine and surgery.

"Students wishing to take out the degree of doctor of surgery

are obliged, in addition to this course, to attend the surgical clinique, and the lectures upon the practice of surgery, during the fifth year; but as these lectures take place at the same hour as the ophthalmic clinique, those pupils are compelled to attend the latter in the next ensuing season, that is, the first semester of the sixth year. Those who wish to take out a special diploma, as *Augenarzt*, are obliged to repeat the second semester of the ophthalmic course;—and those who wish to become master-accoucheurs are required to attend for two additional months in the obstetric clinique, and also to undergo an especial examination.

"Thus we find that according to this very extensive and well-arranged course, not only is the routine of subjects accurately defined, but the student is obliged strictly to adhere to them in the manner, and according to the order marked out by the board of medical directors. I cannot too strongly admire and recommend this practice, more especially as it is one whose adoption in Great Britain would be a vast improvement in the present system of medical education there. In England, with few exceptions (and even in those exceptions the kind of instruction is very meagre), there is little or no preparatory education required by the different colleges and licensing bodies. The student is at perfect liberty to choose what lectures, and how many, he will first attend; the object not being how he can best prepare his mind, by initiatory degrees, for the more mature branches of study, but how he can soonest, easiest, and cheapest become possessed of the *certificates of attendance* upon these lectures, a large majority of which said lectures he has never heard, nay, may never have seen the lecturer till he comes to purchase from him the necessary certificate. There being no tests required, as to his knowledge of any of the subjects he is *supposed* to study, till the hour of his examination (still some years distant), a great number of them have never cost him an hour's thought or reading; and when this examination does arrive, the chances that he is never asked a question except upon anatomy and surgery, and a little physiology, are, in the chief licensing institutions in Great Britain, so slight as almost to amount to a certainty. Again, in the order (if the term can be so applied) of these studies, what difficulties do not hourly present themselves in the student's path. Hospitals and practical subjects are attended to long before their theory has ever been learned. Here the pupil really *walks* the hospital without acquiring a definite knowledge of any one thing; he witnesses operations of which he neither understands the rationale nor the cause, except by his grinder, during a few hard months' study prior to his examination, the result of which more frequently depends upon his memory than his practical knowledge; he is never once called upon to test or exercise his acquirements until the hour before he receives a license to practise, and too frequently he finds, at the conclusion of his studies, that he has begun at the wrong end. As matters now stand in this country, this is not the student's fault, but the fault of those who have, or ought to have, the direction of his studies and pursuits. The contrast with

Austria, and the medical schools of the Continent generally, may be learned by an examination of the programme of the different lectures. Moreover, as in the cliniques, so also at the lectures, the students are examined by the professor at the end of each semester, twelve at a time, as to their proficiency in the subject of each course of lectures they have attended, before they are permitted to pass to a higher class. Private courses, particularly on operating in eye-surgery, and on pathology, are permitted to be given by the professors of these subjects, but no other lectures are recognized by the university or the medical faculty, except those specified in the foregoing and following programme of the courses:—

"The professors can lecture from works published by themselves, or from some work of which they have made choice, and which meets with the approbation of the constituted authorities. It is an established rule, not only in the medical, but in all the other faculties, that each course of lectures is to be grounded upon some one text-book, not too voluminous, and within the student's reach and comprehension, instead of being, as in this country, a compilation from numerous ancient and modern authors, the majority of which are but refutations of the hypotheses of the foregoing ones, and of which the student remembers but the names.

"As the subject of physiology naturally admits of a greater scope to the imagination, and a greater exercise of mental powers than is quite compatible with the present system of Austrian *regime*, I may mention that the work of Professor Lenhossik, which previously served as a text-book in several of the universities, having attracted the attention of the authorities by some equivocal passages and expressions which it is said to contain, produced the following imperial edict in the year 1835:—

"'As the work composed by Michael Lenhossik, entitled "Institutiones Physiologiæ Organismi Humani," is not altogether free of some untenable hypotheses, and some equivocal expressions, and is therefore dangerous, it is necessary to warn each of the professors of the establishments for superior instruction, by whom the work is used as a text, to limit themselves strictly in their verbal illustrations, to what the book may contain that is useful to the students in midicine, or the merely scientific parts, and to omit all the hypothetical ones which have no practical application. When they meet in any of those paragraphs expressions wanting justness or precision, and therefore liable to an interpretation contrary to morality or religion, they must explain them so as to prevent such interpretation. Where this work has not served as a text to the lecturers on physiology, it must not be introduced, and it is recommended to encourage the professors, who are interested in the matter, to publish some useful work on the subject which may replace it.'

"This latter recommendation may well be given, for the science of physiology has never yet had more than a name in Austria, and I know not of any work upon that subject which has emanated from any of its universities. How far this defect is to be explained by the

religion of that country, by the peculiar character of the censorship, or by enactments such as those I have just quoted, I shall not take upon myself to say. With respect to the present condition of this science in the Austrian capital, all I have to offer is, that there is a lecturer upon that subject who has published a tract of a few pages upon the spermatozoa of the salamander.

" Independent of the ordinary course, there are several lectures by the extraordinary professors, attendance upon which is optional with the students; these are, upon the mode of recovering asphyxiated persons, or those meeting any sudden death, by Dr. Bernt, once a week; upon pathological anatomy, three times a week, in the museum of the Krankenhaus, by Dr. Carl Rokitansky; on dental surgery, by Dr. Carabelli; diseases of women and children, by Dr. Lobisch, both three times a week; lectures upon the instruction suited to nurses and the attendants upon the sick, by Dr. Florian Schmidt; public hygiene, by Dr. Bastler; the history of medicine, by Dr. R. Seligmann; upon bandaging and surgical instruments, by Dr. Graf; and upon the care and treatment of children in health and disease, by Dr. L Mauthner, the philanthropic founder of the new hospital for the diseases of children.

" Anatomy has not as much attention paid to it in Vienna as in the Parisian and other continental schools; there are, however, abundant opportunities afforded for becoming practically acquainted with this branch of medical knowledge, in the great number of subjects offered for dissection. Generally speaking, I have not found the Austrian students as well informed upon this subject as the advantages they enjoy would lead us to suppose; they are not by any means neat dissectors, and minute anatomy receives but little attention. The pupils dissect the muscles, the viscera, the vascular and the nervous systems, &c. &c., separately and in distinct courses; but although this mode may be the simplest and easiest for the beginner, and least harassing to the minds of all, yet for this reason, regional and surgical anatomy is less studied or understood than it is with us.

" The dissecting room is situated to the left of the great entrance to the university, it is lofty and extensive, but not kept so clean as it might be. The professor of anatomy's assistant (the prosector) attends during certain hours to superintend the dissections, but his services are by no means sufficient for so numerous a class. The want of a few energetic demonstrators is much felt.

" Professor Berres has already acquired a European celebrity, particularly as a microscopic anatomist, and as an improver on the Daguerreotype; several of his preparations upon the former subject*

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* " In all the German schools, anatomy is taught perfectly distinct from, and unconnected with physiology, the anatomical course being a mere demonstration, and confined to the description and relation of parts and organs, their structure and mechanism, and without any references to their uses and functions. I was not a little surprised, on going to hear the greatest modern physiologist, Johnnes Müller, lecture in the university of Berlin, to find him clad in the garb of a dissector, demonstrating the bones and ligaments."

are certainly most beautiful, and these the professor frequently exhibits with the aid of a very powerful oxhydrogen microscope, at his *soirees* during the winter season. The remains of the preparations of Ruysch and Lieberkülin, to which I have already referred, are in his keeping.*

"The anatomical museum of the university is of little value, it, however, possesses some admirable specimens of injection from the hands of Berres. It likewise contains a good craniological collection: and the skulls of the different nations, though neither well arranged nor accurately marked, will be found highly interesting to those versed in ethnographical science. It was upon this collection of heads that the talented and ill-treated Gall made some of his early observations. Among these crania will be found several remarkable Austrian heads, whose Mongolian or Turanian contour evince an Asiatic origin;† a second form of Austrian head, of which there are several specimens in this collection, approaches the type of the ancient Peruvians."—pp. 39-47.

Again, at page 59, we have an account of the laws regulating the practice of pharmacy:

"With the education of those two classes of practitioners described in the last chapter our commendation ceases, for that of the lower grades, the magisters or patrons of surgery, is of a very inferior description; and the disabilities under which this class labour in the position which they occupy in the caste-maintaining system of Austria, is such as degrades the surgeons, not only in letter, but in spirit, to the mere barbers and dressers of wounds—a position from which they can never rise, no matter what their talents or ability. Every *Wundarzt* (one of the class of whom I now write) is obliged by the law of the land to shave for a couple of *kreutzers*, exhibit the bason and striped pole, and keep open a barber's shop; some idea of the interior of which may be learned by a glance at Tenier's graphic illustration of a Flemish surgery. And although many of these surgeons in the larger cities do not themselves manipulate upon the jaws and chins of the inhabitants, yet are they obliged to keep a servant or an apprentice to do so, as hair-dressers or any other class of the community, except the *Wundärtze*, are not permitted to perform this operation. These general practitioners are not allowed to sell medicine, but to them is committed the performance of all the minor chirurgical parts of the profession, such as usually falls to the lot of the apothecary with us; as for instance, bleeding, cupping, the application of leeches, and the dressing of simple wounds and fractures, &c. They cannot prescribe medicine, except a few simples, unless in cases of

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* "Professor Hyrtl, of Prague, now one of the most successful anatomical injectors in Europe, was a pupil of Berres."

† "In the fine collection of skulls in the museum at Heidelberg, the venerable Tiedemann has attached the label 'Caput Turritum' to each head bearing a character similar to the above."

immediate danger, and when a physician or doctor of surgery is not at hand; they form, however, the principal practitioners in the distant country parts.

"Until within the last few years, it was necessary, in order to become a *Doctor der Chirurgie*, first to take out a degree in physic, and then to study surgery; and therefore very few ever put themselves to the trouble with the loss of time and labour to attend to the latter; a circumstance which, added to the condition of the *Wundarzt* already explained, operated materially in keeping Austrian surgery far below that of any other continental country, or its own state of medicine. The endeavour made by the physicians to preserve the two classes distinct, has also operated most injuriously. One instance of this occurred to my own knowledge, in which a young rising practitioner was refused admittance into the faculty of medicine until he removed the word *Operateur* from his name. I am happy, however, to say, that these disabilities are daily decreasing, and in a few years more, the arrival of a *Deiffenbach* in the imperial city will not exhibit the want of confidence which the Austrians have in their own operators and surgeons.

"The practical course '*Chirurgische Studium für Civil Landwundärzte*' occupies three years, and may be passed in a lyceum, or faculty of science, as well as in a university. It is as follows:—

	PERIOD.	SUBJECT.	PROFESSOR.	HOUR.	FREQUENCY IN THE WEEK.
First Year.	First Semester.	Introduction to Medical Studies, and Physics	Dr. John Wisgrill.	10 to 11	5 times.
		Anatomy	Dr. Berres.	9—10 & 3—4	do.
		Botany	Dr. John Wisgrill.	7—8	do.
		General and Pharmaceutical Chemistry	do.	8—9	do.
	Second Semester.	Anatomy	Dr. Berres.	9—10 & 3—4	do.
		Dissections	From beginning of Oct. to end of April.		
Second Year.	First Semester.	Physiology, Pathology, and Therapeutics	Dr. C. D. Schroff.	11—12 & 4—5	5 times.
	Second Semester.	Pharmacopœia, and the Art of Prescribing, Dietetics, &c.	do.	11—12 & 4—5	daily.
		Theory of Midwifery	Dr. J. Klein.	12—1	do.
		Epizooities (Diseases of domestic Animals	Prof. Hayne.	5—6	3 times.
Third Year.	First Semester.	Medical Clinique	Dr. A. Wawruch.	8—9	daily.
		Special Therapeutics of Internal Diseases	do.	9—10	5 times.
		Surgical Clinique	Prof. Wattmann.	10—11	daily.
		Surgical Operations	do.	11—12	5 times.
		Legal Medicine—(*Gereichtliche Arätzneykunde*)	Dr. Josh. Bernt.	12—1	do.
		Medical Clinique and Therapea	As in former Semester.		
		Surgical Clinique, Therapea, and Operations	do.		
		Ophthalmic Surgery	Prof. Rosas.	12—1	do.

"The preliminary education of this class of students consists in having passed the third class of a superior preparatory school, and the four grammar classes of a gymnasium, as well as in having received a first-class certificate; the majority of these students serve an apprenticeship in the *Offitzin*, or the establishment of a *Wundarzt*.

"The highest rank that this class can attain to is that of *Magister der Chirurgie*, which is obtained by having studied six grammar classes in a *Lehranstalt*, and passing the third year of his practical course in a university, in what is termed the little course, i. e., by repeating the surgical lectures, together with those specified for the same year in the foregoing table, and in having undergone a public examination before the professor and his class upon the subject of bandaging and the use of instruments. Students who pass directly from the gymnasium to the practical course, without being bound to a *Wundarzt*, frequent the wards for the treatment of internal diseases in some of the recognized hospitals, for *one month!* and also assist in the surgical practice of an hospital for three months: those who commence their course in a university school, or who have been apprenticed to a surgeon, require a certificate of hospital attendance but for one month altogether; this, however, is independent of the clinical instruction, and is intended to give them some knowledge of the minor details of a sanatory establishment. The *Magister der Chirurgie* passes two examinations: the first includes anatomy, surgery, practice of physic and legal medicine—there are six examiners; at the second he makes one public operation as by those of a higher grade. The cost is one hundred and two florins. The *Civil und Landwundarzt*, or *Patron der Chirurgie*, passes but one examination upon the same subjects as the master in surgery; he is not required to perform an operation; The cost is fifty-four florins. The number of *Civil und Landwundarzts* in Vienna are, twenty-eight in the town and eighty-four in the suburbs. Of the higher grade (the *Magister Chirurgie*) there are thirty-five, the majority of whom are employed in the hosgitals or under the poor law.

"Accoucheurs are examined by three professors on the theory and practice of midwifery and obstetrical jurisprudence (*gerichtliche-geburts-arzneikunde*)—cost forty florins; and for midwives (*Hebammen*) thirty-four florins. Oculists have two examinations—the first upon the theory and practice of ophthalmology, with three examiners; the second consists in performing a certain number of operations: the expense is forty-seven florins. The lowest grade of practitioners allowed to take out this degree is that of *Magister der Chirurgie*. Dentists have four examiners, and pay fifty-four florins.

"There appears to me one great and manifest defect in the medical education of Austria—I mean that of comparative anatomy, which is not taught, because not known, in this university. But of this, as well as geology, I shall have to speak in another place.

"*Pharmacy.*—There is no division of medical science in Austria that is better managed, or that might with greater advantage be imi-

tated in many respects by ourselves, than that of pharmacy, for it is there studied and practised as a separate and distinct branch of knowledge: the apothecary neither aspiring to the character of a medical practitioner on the one hand, nor descending to the trade of a druggist or retail grocer on the other. There, the apothecary is solely a compounder of physicians' and surgeons' prescriptions. He dare not, under the severest penalties, prescribe even the most simple remedies, nor perform the most insignificant surgical operations—nay, more, he cannot sell a dose of physic without the written order of a physician or surgeon who is recognized by the university of his country. Under this order of things, the prescriber and the taker of medicine have the advantage of having that medicine accurately compounded by a properly educated pharmacean, whose whole time and ability are devoted to the subject. Only a certain fixed number of apothecaries are permitted to dispense and sell medicine in the empire: in Vienna the number is limited to forty, and never varies, for the *Apotheke* or shop, like the title of monarchy, never dies, but merely changes masters. These establishments are known by their signs,* and not by the names of their owners, who may be, and often are, widows of apothecaries, or merely tenants of the relatives or executors of such. The apothecary has no connexion whatever with the patient, he never leaves his shop to apply his remedies or perform the minor operations of surgery, such as bleeding, cupping, leeching, &c., as with us—these being, as I have shown, the exclusive province of the *Wundarzt*. Each medicine has a certain stated price fixed by authority, and marked in the pharmacopœia and medical tax book, so that no exorbitant demand can possibly be made; and as has been already stated, no apothecary dare, under a heavy penalty, compound the prescription of any medical man whose name is not set forth in the printed list of authorized practitioners. The poor of this country being every where so well provided for by the state, the great number of hospitals that exist, and the smallness of the fees received by the practitioner, enabling the middle classes to procure proper medical advice, render unnecessary the system of self-doctoring or quack-doctoring, in use in Great Britain. The department of pharmacy consists of doctors of chemistry and master apothecaries, and these latter are again subdivided into the *Apotheker*, who is a *bona fide* possessor of a shop, the *Pächter*, or tenant, who hires such of an apothecary or his relatives, and the *Provisor*, who is a dispenser employed by an apothecary unable to manage his own concerns, or by his widow or friends, &c., and finally the *Gehülfe* or journeyman employed under any of these. No apothecary or doctor of chemistry can hold two establishments.

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* "Vienna has been long famed for the beauty of its signs; and some of the best executed of these belong to the establishments of apothecaries. Several have been painted by artists of considerable merit, and will well repay the visit of the traveller, particularly one in the Graben, and that beside the post office."

"The affairs of this body, as also those of the physicians and surgeons, are under the care and direction of a corporation styled a *Gremium;* a notice of the construction of which here will serve for each of the other departments. It is thus constituted:—In the metropolis of each province of the empire there is a *Hauptgremium* or chief corporation, consisting of a director, appointed triennially, and two assistants, chosen by ballot, and all the apothecaries keeping shops in the town or suburbs, either as possessors or tenants (*Pächter*)—and in case the possessor be not an apothecary (as in the instance of widows) then the *Provisor* employed to conduct such an establishment has a seat in the gremium. In Vienna there are two directors. In Bohemia *Provisors* have no voice in the gremium. This corporaration meets quarterly, and holds a general assembly every September, and the notary of the medical faculty of the province presides at each of these meetings as Gremial-commissioner. Each member of this body is bound to appear at the quarterly meetings, or send a sufficient apology to the director.

"In every district of the province there is a *Filialgremium,* or auxiliary corporation, constituted in like manner with the chief one, and governed by a director and assistants: at its quarterly meetings and general assembly (which is held a fortnight before the metropolitan one) the district physician presides. This district gremium sends a deputation to represent its members at the annual September meeting in the chief city; but at the same time every recognized country apothecary is permitted to attend, though not to vote, at the general assembly. In Bohemia the district or filial gremium is under the direction of the government office of its state. The province of the gremium is to oversee and regulate all matters relating to pharmacy, to appoint *Provisors*, examine and grant their freedom to apprentices, direct the financial affairs of the province or district, adjudicate in all disputes among the members or their assistants, assist distressed members of their body, together with their widows and orphans, and also return a statement of their proceedings to the medical department of the government.

"If an apothecary dies or falls sick, the gremial director takes charge of his establishment until a *Provisor* or a new occupant can be provided; he has, besides, to see that all persons selling or dispensing medicine within his district or town, are properly authorized and educated; and to inspect all shops as to the quality of their medicines. The gremium is supported by taxes levied off each of its members for license to hold *Apotheken*, to receive apprentices, assistants, provisors, &c., sums varying from forty florins in the cities, and twenty in the country parts, to sums so small as one florin annually. Each member pays one hundred florins for his incorporation in Vienna; fifty in a provincial city, and twenty-five in a filial gremium. In case of widows carrying on the business of an apothecary, by means of a *Provisor*, the sum is but one-half. The directors are obliged to send in an annual account of their income and expenditure to the magistrates of

cities; and to the local government officers in rural districts. The expense of the head gremium consists of one hundred florins to the commissioner, fifty to each of the directors, ten to an assistant, and one hundred and twenty to the porter. The salaries of the officers of the filial gremium are not quite half these sums, and in Bohemia they are still less. A portion of these salaries is paid from the fees just mentioned, and the remainder out of the general treasury. All surplus money is put into a fund and lent out on good security; a portion of the interest going to defray a part of the general expenses, and the remainder of it being devoted to assist unfortunate or distressed members, and to provide travelling money for journeymen unable to pay their own expenses, &c. Each doctor of chemistry, or master apothecary, must belong to the university or lyceum of the province in which he practises.

"Regarding the apprentices, the following regulations are strictly adhered to: that the pupil has already passed through the four first grammar classes in a gymnasium, and is fourteen years of age. That he is bound for a period of not less than four years, in presence of the gremial director, and one member. That he attends two courses of lectures, either in a university, or a recognized lyceum, where the minor branches of medicine are taught. If there is no such school within his reach, then his master is bound to instruct him in those acquirements taught to pharmaceutical students in the established university course, and to keep for his perusal certain works set forth by authority of the gremium.* The ordinary course is as follows:

FIRST YEAR,	*First Semester.*—Mineralogy.
	Second Semester.—Zoology—Botany.
SECOND YEAR,	*First Semester.*—General Chemistry.
	Second Semester.—Pharmacy.

"At the end of his apprenticeship the student, having been first examined by the filial gremiun, as to his knowledge of the elements of these subjects, if forwarded for further examination to the *Haupt-Gremium*, where he is examined on his knowledge of pharmacy; when, if found to be proficient in this, and his general conduct warrants it, he receives his *Freisprechung*, or freedom from apprenticeship. This is termed the *Tyrocialprüfung*, and constitutes him a *Gehülfe*, or assistant, in which capacity he must remain four years in some Austrian *Apotheke*, or as is generally the case, in several, from their being, like the journeymen of all other trades, obliged to travel through the country. At the expiration of that period he is eligible to be examined for his degree of *Magister der Pharmacie*, at a university, by five examiners, consisting of the president or dean, the vice-director of the medical faculty, and the professors of che-

* "*Ehrmann's Lehrbuch der Pharmacie. Zimmermann's Grundzüge der Phytologie. Goldfuss's Handbuch der Zoologie. Leonhards' Naturgeschichte des Minoralreches*—are the works specified by the gremial authority."

mistry, botany, and natural history, on the subjects already mentioned in the course. The lectures are free to all, but the examinations cost eighty-six florins (£4 10*s.*)

"To obtain the degree of Doctor of Chemistry, the student must have already passed through six grammar and one philosophy class in his preliminary education, and he is required to repeat the course of lectures prescribed to pharmaciens in their second year; to make two examinations, and to perform and explain two chemical experiments, and the latter of those publicly, in the laboratory of the university. The most respectable apothecaries in the chief towns of the empire are doctors of chemistry; should, however (as is frequently the case), the doctor of chemistry be also a doctor of medicine, he cannot hold an *Apotheke* and at the same time prescribe medicine.

"The following are some of the principal rules concerning the duties of apothecaries, and the composition and sale of medicines: all poisons are required to be kept under lock and key, and can only be compounded by the head of the establishment. All powerful medicines, as emetics, drastic purges, strong mercurial compounds and narcotics, and all the preparations marked thus + in the tax-book, are not permitted to be sold without the recipe of an authorized practitioner. No apothecary dare, under the severest penalties, alter any item in a prescription. It is likewise set forth in the regulations, that unless the prescription is clearly written, and the apothecary clearly understands it, he is forbidden to compound it. On the death, sickness, or absence of an apothecary, the director sends a provisor at once to fill his place; until such is done no medicine can be sold or compounded in the establishment. Apothecaries known to sell medicines that *might* procure abortion, without the order of a physician, are punished in the severest manner.

"In the remote and country parts of Austria there are but few apothecaries; for, not being allowed to prescribe or practice themselves, and the law permitting their selling but a few simples without a written order, they are almost wholly dependent on the medical practitioner. In such places where both exist, the apothecary dispenses the medicines ordered by the practitioner for the poor of the neighbourhood; his accounts are audited and taxed according to the printed tariff at the end of the year, and he is paid by the local civil authorities. This is the nearest approach to a dispensary system that I am aware of in southern Germany. If an apothecary resides within a certain distance of a *Wundarzt*, he can prevent the latter dispensing medicine.

In the cities a mutual interchange of good offices is carried on between the prescriber and compounder of medicine, pretty similar to that which is said to exist in some parts of this country; it is managed, however, in a different way. One of the chief apothecaries in Vienna showed me his books for a number of years, by which I find that he, in common with the rest of his craft, was obliged yearly (at Christmas) to send the different physicians and surgeons whose prescriptions

he had most frequently compounded, presents of meat, coffee, groceries, &c., &c., to a considerable amount; but the tax did not end here, for the servant of the doctor had likewise to receive a largesse. To such an extent had this custom grown, that a few years ago, when owing to the increase of homœopathy, the sale of medicine in Vienna had decreased a third or more, the apothecaries held a meeting, and agreed to resist this levy, and in lieu thereof, gave each medical practitioner in the city a sum of money commensurate with the number of his prescriptions made up in their establishments. There are no medical halls, and the apothecary's shop can only be distinguished by its sign. The Austrian pharmacopœia shows but little advance in the science of the materia medica for the last twenty years. It is so seldom revised, that the most valuable and approved medicines do not find their way into it, and consequently, are not to be found in the shops, till years after they are in common use in the rest of Europe; and when a new edition of the pharmacopœia does appear, though edited by the president of the medical department, the professor of materia medica, and the director of the pharmacy department, it has to go through the ordeal of a strict censorship!! In Austria, both the public on the one hand, and the prescriber and legitimate compounder of medicine on the other, are protected against quacks, mountebanks, patent medicines, wonder-working nostrums, poisonous pills, mineral cosmetics, and the thousand deleterious substances advertised, puffed, and vended, under the name of specifics and panaceas, not only with the permission, but frequently with the *authority of the State*, in Great Britain. The public prints are not hired to entrap the ignorant or credulous, by lauding empirics and impostors; the public eye is not disgusted by unseemly and disgraceful placards; nor modest females insulted, by having indecent handbills thrust upon them in the open streets, as occurs daily in this country. Moreover, no one is allowed to sell medicine of any description without a proper education, and a satisfactory licence; and the trade of a druggist is, as it should be, confined to the wholesale vending of medicines to apothecaries. England might and ought to take a wholesome lesson from this well-ordered condition of the present state of pharmacy in the Austrian states.

"In this division of the Austrian *corps medical*, I have thus entered minutely into its government and regulation, for as the other branches of the faculty are subjected to rules based upon similar provision, and are also incorporated into gremiums, more or less resembling that of the apothecaries, it will be unnecessary to re-enter upon their description in detail.

"There is a surgical *Gremium*, similar to the foregoing, in both the towns and the country parts of each district, to which every practitioner of that grade must belong. In Vienna this corporate body is governed by four *Vorsteher*—two for the town, and two for the suburbs—who are chosen annually from the members of the gremium; the notary of the medical faculty acts as a commissioner at their meetings.

Prior to the year 1804, it was only necessary for the *Wundärtz* to serve an apprenticeship for three years, and to study his art under his master, with whatever opportunities his situation afforded, without going through any regular academic course of study, or attending any established school of medicine. No surgical student of this grade is allowed to attend lecturers during the first three years of his apprenticeship. Severe penalties are inflicted upon all *Wundärzte* who attempt to practise without undergoing a proper examination, and taking out a specific licence.

"There are journeymen *Wundärzt* similarly situated, and under similar regulations with those of the apothecaries I have just described. The incorporation tax for a *Bürgerlichen Wundarzt* is thirty-five florins; and three florins yearly; for a *Gehulfe*, one florin; for receiving an apprentice the master pays six florins, and at the *Friesprechung*, nine florins. In the country parts these taxes are reduced to twelve florins, one florin; twenty-six kreutzers; three florins, and six florins.

"There are twenty gremiums in Lower Austria, with an average number of thirty-two members in each. There is one gremium in every *Kreisamt*. The meeting is held in June, and the *Kreisarzt* or physician of the district has the supervision and direction of the whole. The taxes vary in different provinces. These practitioners are remunerated according to a regular scale of fees; thus, for bleeding, ten to seventeen kreutzers; for dressing a flesh wound, twenty-four kreutzers; if the wound be of any magnitude, forty-five kreutzers; for the whole attendance on such, from one to two florins in the country, and fifteen to twenty kreutzers in towns; for fractures or lacerated wounds, or injuries of the head, the fees are greater, and also for the general attendance on fractures, &c., as well as for the operation of trepanning, the latter being, by the medical laws of Austria, within the province of persons who are not permitted to prescribe a dose of medicine! If a fire occurs in the neighbourhood, the *Wundarzt* in whose district it happens is obliged to attend, to be prepared for any accidents that may take place; and in case of the appearance of epidemics, he is obliged immediately to notify such to the head physician and the local government office.

"The number of these practitioners in each district is limited, and none others are permitted to locate themselves without a special licence from the government, unless the inhabitants of the place desire it. Each *Wundarzt* has under his care a certain number of villages, and no other surgeon is allowed to encroach upon his walk, unless sent for by the desire of a patient. Unless the *Wundarzt* belongs to the *Gremium*, he is not permitted to keep an *Officin*, or shop, nor to hang out his sign, and he is forbidden to treat any internal disease, if there is a physician in his district. Circumscribed as is his practice, yet he enjoys an immunity from all quacks, who are punished with six months' imprisonment for every offence; and physicians are not allowed to bleed, cup, or in any way interfere with the province

of the *Wundarzt*. If there is not an apothecary within one hour's ride of his residence, then the *Wundarzt* is permitted to compound and sell a certain limited quantity of medicine. The widows and daughters of these medical men are allowed to continue their establishments on terms similar to the regulations of apothecaries. There are several volumes of laws relative to the duties and restrictions of *Wundarzte* in Austria."

We have quoted at length the foregoing passages relative to the practice of medicine, surgery, and pharmacy in Austria, in hopes that an accurate knowledge of the state of medicine in a country where it is placed completely under the direction of the government, would be read with interest and profit at this moment, when our own legislature is occupied with the very difficult questions, as to the best mode of regulating medical education, and reforming or modifying the present state of medical charities. The system of education pursued in this country is no doubt capable of improvement; but it is by no means so easy to determine what means should be employed for effecting that improvement. The reader will perceive, however, that the Austrian government has provided an extensive preliminary education, for all those about to adopt the profession of medicine; and, this, perhaps, is the part of the curriculum most worthy of imitation, and the want of which is so universally acknowledged by all parties.

We pass on now to the pages where we have a description of the system of clinical instruction adopted at Vienna.

"The chief difference observed between the methods of acquiring a knowledge of medicine at home and on the Continent, consists in the better clinical instruction of the latter. It was this admirable system of education that first attracted the attention of foreign students and professors to the German school of medicine in the beginning of this century; and to it may be traced, in a great measure, the rapid rise and steady progress of medical science in that country, since the conclusion of the last general European war. This system, though not carried to its full extent, is now so generally adopted by the most distinguished teachers in this country, and its usefulness is so universally admitted, that it needs no powers of language to induce the student and the professor to cultivate it with assiduity as the best means of advantageously prosecuting the noble labour and inquiry in which both are engaged. The cliniques of Vienna have long been celebrated, but to the British medical public they are not yet sufficiently known to be appreciated. This branch of practical education, as required by the Viennese university, and denominated the *Klinishe Lehranstalten*, consists of four public schools—the medical clinique for physicians, the medical clinique for surgeons, and the surgical and

ophthalmic cliniques, besides which there is a private special clinique for diseases of the chest, under Dr. Skoda.

"The medical clinique for physicians is held from eight to ten o'clock, on five days in the week, in a distinct building of the *Krankenhaus*, which faces the entrance into the first great quadrangle ;* it consists of a male and female ward, containing together twenty-eight beds, with an average reception of from two hundred and eighty to three hundred patients annually ; these patients always consist of the most interesting and instructive cases selected from the general wards of the hospital by the professor's assistant, who, on a vacancy occurring in the clinique, has the privilege of removing into it any patient he chooses—each new case is immediately delivered into the hands of a pupil, taken in rotation, and styled the *Ordinarius*, who carefully notes the symptoms, and all the phœnomena of disease then presenting, and who prescribes, under the superintendence of the assistant, any medicine that may be immediately necessary. On the next visit of the professor, the *Ordinarius* examines the patient in the presence of the class, inquiring minutely into the origin and history of the case—the state of the functions, secretions, and excretions, and details the presenting appearances, &c. &c.—the pupil is then questioned by the professor on any point in the examination he may have omitted, and is required to give his opinion on the prognosis and diagnosis, and finally to prescribe the medicine and dietetics—all which are corrected, if necessary, by the professor, who then makes some observations on the general character of the disease, and the peculiarities of each individual case, and defines the line of treatment to be pursued. The pupil then prepares a concise written report of the case in Latin, in which tongue nearly all bedside communications between the professors and the students are conducted in Vienna ;†—on each subsequent visit the pupil describes the changes that have taken place in the interim, the effect of the medicines, and the state of the functions. Moreover, a tablet of tolerable dimensions is hung over each bed, specifying not only the disease, name, age, sex, and nativity of the patient, but also the medicines, diet, and regimen, the state of the pulse, the temperature, and the secretions.‡ This judicious arrangement not only makes known to the class the precise condition of each case, but saves the patient the annoyance and injury of that continued questioning by the students, practised in other hospitals, particularly in this country.

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* "In it also reside the director, the professors of medicine and pathological anatomy, and some of the subordinate officers of the *Krankenhaus direction*, and in the under story we find the *Gasthaus* already alluded to."

† "The British student will be not a little astonished at the facility with which Germans converse in Latin, and from their mode of pronunciation, will at first find it difficult to comprehend them, he should therefore practise the speaking of Latin before he leaves this country."

‡ "This is written in Latin by the ordinarius, each day, on a black painted board, with simple flour and water."

"According to the curriculum of medical education in Austria, it is not left to the student's option at what period of his course he will make it his convenience to attend this or any other clinique, for he is not permitted to enter upon this practical branch of study till the fourth year of his course, and until he has been previously grounded in anatomy and physiology, general pathology, chemistry, and pharmacy, as well as having received instruction in some of the minor and collateral walks of his profession, such as zoology, botany, &c.; he does not, therefore, engage in it while he is yet unequal to the task required of him, or is incapable of duly appreciating the advantages he is offered—circumstances which, in this country, add not a little to the perplexities and difficulties which beset the student, according to our present very bad system of instruction. By the existing regulations of the Vienna university, the student requiring the degree of doctor of medicine, or doctor of surgery, must attend four six-month courses of practical medicine in this clinique, in the fourth and fifth year of his studies. From the character of the instruction pursued in this and similar institutions, the student's mind is trained and unconsciously led into a proper course of investigation—he is literally taught how to observe—he is daily called upon to exercise his own reason and judgment, and thus he has not only become familiar with disease, but he has acquired a facility of expressing himself concerning it, and of arranging and committing to paper, in a definite form, his thoughts and observations on it. How much such a general system is wanting in this country, the student can tell who has been called upon for the first time in his life before a public court of examiners, to describe a disease, and that, the hour before he is licensed to treat it, and who is next sent abroad upon the world a practitioner, to exercise for the first time his own faculties in examining and prescribing for those committed to his care. Thus, says an able Scotch writer on this subject (himself a pupil of this school):—'the graduates of Vienna have not idled away the season for improvement. Placed in a situation suited as well for the communication of knowledge, as for the elicitation of talent, they are schooled in penetration, and in actual habits of observation, and bring into the chambers of the sick, something more than book-learning, something widely different from fashionable accomplishments.'*

"This clinique was established at the time of the first erection of the hospital, in 1784, under Professor Maximilian Stoll, and then contained but twelve beds; in 1800 it was increased to twenty-four, and subsequently to its present complement. Some of the most emi-

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† "The clinique that approaches nearest to the German method is that introduced by Drs. Graves and Stokes, into the medical wards of the Meath Hospital, Dublin. Dr. Graves was long a student in Germany, and on his return to this country in 1820, first established clinical instruction on the German plan (see his introductory 'Lecture on Clinical Instruction,' in the *London Medical Gazette* for June, 1842, and his 'System of Clinical Medicine,' Dublin, 1843, Fannin & Co)."

nent physicians of Germany were professors in this school during the last half century, as Renlein, Frank, and the venerable Hildebrand, father to the present professor, Dr. Franz Edlen Von Hildebrand; the reputation of the son does not approach near that of the father, either as a teacher, or a practical physician.

"Attached to this clinique is a lecture-room, where, at a later hour in the morning, the professor delivers a systematic course of lectures upon the theory and practice of medicine.

"Thus far the theory and principles of clinical medicine are admirably framed, but in practice this school is not without its disadvantages to both patients and pupils, arising chiefly from the great number of the latter; the crowd of students collected into those comparatively small wards, at the hour of visit, fills them to excess, rendering it not only impossible for the majority to hear or learn any thing, but at times tainting the atmosphere beyond what can be imagined. This latter pernicious effect upon the tone of diseases is, however, more observable in the other cliniques (especially the surgical) than in this. If it be true that more is learned from one well-observed case throughout its progress, than from the cursory oversight of hundreds in the daily *walk* of an English hospital, it is equally true that the number of the observers must be also limited. Another decided disadvantage in this exclusive clinical instruction (which does not exist, as far as it has been introduced into this country), is, that the pupils are not required, and in some instances are not permitted, to visit the wards of the general hospital; for although it is of great importance to the younger students to be first made acquainted with disease by treating and observing individual cases, yet to the more advanced pupil it would be of great practical importance to visit, even for a few months, the different divisions of this great hospital. Not only would this have a beneficial effect in preventing his mind generalizing from a few cases; but in some of the wards for special diseases, as those of the skin, syphilis, &c., &c., where such variety arises, it is absolutely necessary to observe them upon a large scale.

"The next division of the *Lehranstadt* is the medical clinique for surgeons of a lower grade than those who study in the foregoing; these are the *Civil und Landwundärtze*, a class approaching in character the general practitioners of this country. This department, *Die medicinische Klinik für Wundärtze*, has but one ward, with thirteen beds, and its receptions average one hundred and seventy yearly. The professor, Dr. Andreas Wawruch's visit, is from eight to ten o'clock in the morning daily. The surgical students described above, are required to attend this clinique during the first and second semesters of their third year. It is conducted on the same principle as the former, but possesses little attraction for the foreigner. In these two, as well as all the other cliniques, the professors hold public examinations at the end of each course; and on the proficiency of the pupils at these examinations the certificate of attendance is alone granted. On

the whole, the present state of pure medicine in Vienna is, when compared with other parts of Germany, at a very low ebb.

"The surgical clinique, *Die chirurgische Klinik*, consisting of two spacious wards, with twenty-five beds, is situated on the ground floor, to the immediate left of the front entrance. The wards are clean and lofty, and, except at visit hour, better ventilated than those of the general hospital. As however the male and female departments are only separated by a door which remains more frequently open than shut, the two sexes are thus virtually placed in the same apartment. Connected with this clinique is an *Ambulatorium* or dispensary, consisting, for the most part, of patients requiring operations, who present themselves from different parts of the empire, to the number of one hundred annually. At the extremity of these wards is a well-lighted public operating theatre, and beyond that, a private one, for the use of the pupils of the operative institute. There is also a collection of surgical instruments and apparatus, and an extensive and valuable circulating library of medico-chirurgical works and German periodicals, which is likewise open to the use of foreigners, on the payment of a few kreutzer monthly. This library is arranged in presses at the end of the male ward, each press being surmounted by the name and titles of the donor, the works being for the most part the gifts and bequests of the different surgical professors who have filled this chair. The professor's assistant is *ex officio* librarian for the time being, and the subscription is thirty kreutzer, or about one shilling of our money monthly. The hour of attendance at this clinique is from ten to eleven o'clock daily.

"All those observations which I have already made with regard to the crowded state of the medical clinique apply with three-fold force to this. During the season of 1840 and 41, there were no less than three hundred students entered in this clinique; and I have frequently seen these small wards so full, as to be impassable at the hour of visit. For the sake of humanity, as well as for the reputation of the school, either a second clinique should be established, or the wards of this increased to three times their present size; the average receptions being from one hundred and sixty to one hundred and eighty in each year, it is here impossible that the usual mode of instruction can be carried into effect. The treatment in this school is very simple, its present professor, Dr. Joseph Edlen von Wattmann, being a disciple of his predecessor, Kern,* without, however, possessing the originality of that distinguished surgeon. As an operator, the profession has little opportunity of judging of his abilities, the great majority of the operations in this clinique being performed by the pupils of the operative institute; but the Viennese is far behind any of the other continental schools in its operations, except those upon the eye, which

* "The system of water dressing so long advocated by the late distinguished Professor Macartney, in the University of Dublin, and now coming into such general repute, was introduced into this clinique by Professor Kern, forty years ago."

are now, as they have ever been, pre-eminent. This may in a great measure be owing to the operations in the general wards of this, and all the other hospitals of Vienna, being strictly private, and seldom witnessed either by the student or the foreign visitor. Both the doctors of surgery and the civil and country surgeons, *Chirurgiens de Ville et de Campagne*, attend this clinique: the former during the four last seasons in their fourth and fifth years; and the latter for two courses in their third year.

"Associated with the surgical clinique, is the Operators' Institute, *Das K. K. Chirurgische Operators Institut*, established by the late emperor, in 1807, chiefly at the instigation of Kern.*

"This is one of the most valuable institutions connected with medicine in Austria. Its object is, to educate as operators a certain number of physicians and surgeons. They are fourteen in number, have apartments in the hospital, and are supported by the state for two years, the full period required for their studies. Each of the three grades of the profession are eligible to fill these places, but they must be either doctors of medicine, doctors of surgery, or *Wundärzte*. If the former, they are required to undergo a special surgical examination, and if the latter (or patrons of surgery), they must previously take out the degree of master surgeon (*Magister der Chirurgie*).

"The privilege of sending pupils to this school is not confined to the Vienna University, but a certain number are sent from each of the universities yearly: the candidates are first recommended by the surgical professor, and then make a *concours* in their own university, the subject of examination being topographical or regional anatomy. The election takes place on the 8th of February, and the person elected must sign a bond, promising to remain in the Austrian states. During the first year they operate on the dead body only, and at the end of this period they undergo a public examination, when, if found proficient, they are permitted to operate on the living subject: they also receive private instruction from Professor Wattmann: and the operations of the surgical clinique, with some rare exceptions, are performed by these young men.

"Many years before the establishment of this institution, which is now connected with the university, a similar one existed in the Josephinum Academy for military surgeons. Professor Rosas instructs two of these gentlemen gratis at each of his private courses.

"At the expiration of their two years' study they receive a special diploma as *Operateurs*, and, for the most part, return to their particular provinces, where they are required to serve the state gratuitously for some time; this time is, however, seldom of long duration, for they are very soon advanced to some place of trust and emolument—indeed there are many situations under the medical government of the country that can be filled only by these persons.

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* "The reader will find a detailed account of this institution in the little work of my friend, Dr. Carl Ludwig Sigmund, published in Vienna in 1841."

"MEMBERS OF THE OPERATORS' INSTITUTE.

Lower Austria	52	Brought forward	101
Upper Austria	8	Gallicia	6
Styria	17	Venetian States	15
Bohemia	12	Lombardy States	16
Moravia	3	Hungary	7
Carinthia	1	Transylvania	5
Carniola	1		150
Illyria and Coastland	4		
The Tyrol	3	Russia	2
Carried forward	101		152*

"One hundred and seventy-four physicians and surgeons have been educated as *Operateurs* at this institute since its commencement, twenty-two of whom have since died; the remaining one hundred and fifty-two are distributed throughout the Austrian provinces, as in the foregoing return.

"There is no branch of medical science so admirably managed, or that forms a source of greater attraction than the Ophthalmic Clinique. The high and justly-celebrated character the school of ophthalmic surgery in Vienna obtained for itself above half a century ago, the many esteemed oculists it has brought forth, and the reputation it now enjoys of being the first of its kind in Europe, lead us to inquire somewhat as to its first foundation, its early history, and the means by which it has been raised to its present eminence. It is remarkable that while ophthalmology is, and has for so many years been cultivated with such marked success in Austria, the general practice of surgery is in a state so low, that one of the grades of those licensed by its universities and lyceums to practise that branch of the healing art, is compelled by law to keep a barber's shop. See page 59.

"In 1745, Nicholas Joseph Pallucci, an Italian physician, born in 1719, and already celebrated as an oculist and lithotomist, was brought by Van Swieten from Florence to the university of Vienna, and may fairly be said to have laid the foundation of the ophthalmic school there; for although he was not a public teacher, yet the works he published on affections of the eye, and his expertness as an operator, generated a taste for that department of medical science, that has gone on increasing to the present day. Pallucci was opposed to the extraction of cataract, but depressed, it is said, with much facility and marked success. He invented a new instrument for this purpose, a kind of trocar, not unlike a cristotome, concealed within a sheath, and with the stilet of this he readily depressed. It was an instrument almost peculiar to himself, and soon fell into disuse. He was the first who removed with a forceps an opaque capsule, through an opening

* "Twenty-nine of these are at present, or have been professors."

in the cornea; an operation now frequently performed, especially by Professor Jäger, who, however, uses a hook instead of the forceps invented by the Italian. Pallucci died in 1797;* but, notwithstanding his labours, the present professors of the Viennese school claim Joseph Barth for its founder, he being the first public teacher of ophthalmology in the Austrian dominions.

"Barth was born in the island of Malta in 1745, and studied medicine at Rome, and afterwards at Vienna. When but eighteen years of age he was appointed professor of anatomy to the university, under Stoerk, the successor of Van Swieten. The anatomical school of the Austrian capital acquired considerable renown at that period from possessing the valuable microscopic preparations of Ruysch, Lieberkühn, and Albinus, purchased by Van Swieten for the university. They were committed to the keeping of Barth, and the opportunities they afforded him for studying minute anatomical structure were eagerly laid hold of, and tended in no little degree to his future advancement.

"This tradition is current in Vienna:—A lady attached to the court of the empress, becoming blind, was pronounced amaurotic by the medical advice called in; her malady continuing to increase, the Baron Wenzel was sent for, and he at once declared it to be cataract, and operated on it with success. So amazed was Maria Theresa at this display of Austrian surgery, that she forthwith established a special lectureship of ophthalmology, and Barth was the first that filled this chair 1773; and in 1776 he was appointed oculist to Joseph II. He was a most expert extractor, and there are still living several who have witnessed his operations—the invention and use of Beer's knife (that now so generally adopted) is in a great measure due to him, for although his was longer in the blade, and somewhat broader towards the handle, yet it was upon an enlarged scale the same. The objections urged against it, of pricking the nose from the great length of its point, and not cutting itself out (as it is termed) with facility, is now obviated in that introduced of his pupil, Beer. His mode of operating was remarkable; he did not require an assistant (and was, perhaps, the first oculist who did not), but placing the patient standing in the corner of the room near a window, he opened the lids, and fixed the eye with one hand, he passed his knife through the cornea with the other, as is now so dexterously performed by Mr.

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* "His first work which appeared upon the new method of depression was published in French, at Paris, in 1750, and probably procured him that reputation which recommended him to Van Swieten; it was afterwards reprinted in German at Leipzig, in 1752—See 'Geschichte der neuern Heilkunde von Dr. J. F. C. Hecker, Rweites Buch der Wiener Schule, von 1745, bis 1785.'

"'Bechreibung eines neuen Instruments, den Staar mit allem nur möglichen Erfolg niederzudrücken:' 8vo. This instrument is figured in Blazius.

"His second edition, in Italian, was published in Vienna in 1763. In 1762 he put forth a large octavo, in Latin, on the cure of Fistula Lachrymalis. His other works are on the operations for Calculus and Polypus Nasi."

Alexander, but different from that very distinguished oculist, he stood before his patient. It is needless to add that he was ambidexter.* He died in 1818; his portrait bespeaks him a man of noble and prepossessing appearance, and his ad captandum, but engaging manner and address, added to his acknowledged talents, procured him many admirers.

"Cotemporaneously with him, lived Joseph Mohrenheim in Vienna, who though not a teacher was much consulted on eye diseases, as well as midwifery and general surgery. The peculiarity of his ophthalmic practice consisted in the use of a hook in the operation of extraction, with which, when the capsule could not with facility be opened, he is said to have drawn out the lens.†

"About the same time, Franz Siegerist invented and published in Vienna, a description of his extraction knife, the peculiarity of which consisted in its great length and the fineness of its point, which resembled a needle, and projected far beyond the cutting portion of the instrument. With this needle-pointed instrument he opened the capsule in passing through the anterior chamber—an operation afterwards attempted by Sir W. Adams in this city. The advantages he ascribed to his invention were, that in addition to that just related, he was enabled to see the pupil and the greater portion of the iris when the point of his instrument had made the inner or counter punctuation; and it fixed the eye for the subsequent incision of the cornea by its broader and hinder part. This, however, besides being liable to all the disadvantages of the over-lengthy knife of Barth, could seldom avoid pricking the side of the nose, unless the globe was turned outwards (by depressing the handle towards the temporal fossa) more than is natural; yet it had its supporters in its day. It is described at length by Jüngken in his *Augenoperationen*.‡

"Barth had four highly distinguished pupils, Beer, Prochaska, Schmidt, and Santerelli; the former of whom, the father of modern ophthalmology, was the founder of this clinique, and was the first special professor of diseases of the eye.

"George Prochaska, the celebrated anatomist, though he neither wrote nor lectured on the organs of vision, practised much in private, as an oculist, in Vienna.

"From the time of Barth to the beginning of this century, Joseph Adam Schmidt, professor of surgery in the Josephinum Military Academy, did much to advance oculistic surgery in Germany. He

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* "Barth wrote likewise upon anatomy, and published sixty-one plates of the muscles, in Vienna, in 1786. His operations are to be found in Ehrlich's Chirurg. Beobachtungen, Th. 1, s. 34, and the Salzburger Med. Zeitung, Jahr, 1797, B. 2, s. 33. The first of these was published at Leipzig in 1795. He also wrote a small treatise on cataract (Abhandlung über die Ausziehung des grauen Staars), in 1797. It is strange that none of the writings of Barth are enumerated in Engelman's Catalogue"

† "This operation will be found described in 'Mohrenheim Beobachtungen verschiedener chirurg. Vorfälle,' Bd. 1, 2, 1780 and 1783."

‡ "Siegerst's Beschreibung des Staarmessers und Gegenhalters. Wien. 1783."

delivered a course of lectures, and publicly performed operations on the eye, as the chief part of his course. Among his writings are several admirable publications on iritis, the operations for cataract, and diseases of the lachrymal organs, published from 1794 to 1812; and in connexion with Himley, he edited and published the *Ophthalmologische Bibliothek*. Since his death, his professorship has become a special one for ophthalmology, and has been occupied by the talented and distinguished Jäger.

"To Jacob Santerelli is undoubtedly due the first performance of extraction through the upper section of the cornea. Dr. Mackenzie says, that when he was a pupil at Vienna, in 1817, 'it was usual to attribute the invention of the upper section to Santerelli, and to swear *in verba magistri*, that it was a bad operation.' It has been frequently claimed by others, but, we believe, unjustly. Dr. Mackenzie continues, 'Santerelli was the first (Delle Cateratte, p. 79, Forli. 1811), as far as I know, who actually made the section not semilaterally, as Wenzel had done, but at the upper edge of the cornea. This he did at Berlin, in 1795.'* The method of Santerelli was to operate standing behind the patient, who was seated beneath him, similar to that of Mr. Alexander. He opened the cornea by inserting a knife shaped like a broad-shouldered lancet, into the anterior chamber, through its superior half, acting in this manner like a wedge, and not giving the clean incision made by dividing it from side to side. Dr. Mackenzie doubts (and it appears to us with great justice), whether he could, in this way, divide more that a quarter, or at most, a third of the circle of the cornea. The latter of these authors adds, that he laterally abandoned this method, and made the downward incision. His work was first published at Vienna, in 1795.†

"George Joseph Beer was for many years the assistant to Barth. He published his first essay in 1791, and acquired high renown as a writer, an operator, and an instructor. He commenced as a private teacher on the eye in the year 1798, and from thence to 1815 he was, with the unanimous consent of the profession, allowed to be the most esteemed writer of his day; indeed, he may be said to have been the founder of the present improved practice of ophthalmic surgery, both in Europe and America. He was the first systematic arranger of eye diseases; and had his larger works been translated into our language, they would have robbed many a scribbler and so-called oculist of his borrowed plumes. Beer was a man whose observant eye, superior talents, and high literary and scientific attainments would have raised him to eminence in any walk of life. He was a good anatomist, both human and comparative; and his preparations of the eye, made for demonstration, have been often detailed to me by his pupils, as some of the most beautiful specimens of recent anatomy they had ever wit-

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* "Mackenzie on the Diseases of the Eye."

† "Santerelli ricerche per facilitare il cateterismo e l'est razione della Cataratta. —Vienn. 1795. It is not noticed in Engelman."

nessed. It was, and still is, this superior education, this general, high scientific character of the German professors of ophthalmology, that first rescued that important art from the hands of the itinerant quacks and uninstructed empirics, styled oculists, of the last century. 'Thus,' says a distinguished author, when writing on this subject, 'it is necessary accurately to distinguish those practitioners who have of late years applied themselves in Germany to the diseases of the eye, from the class who are termed oculists, whether of that or any other country. The latter would wish to divide surgery into a number of trades, of which they would monopolize one. The former have not confined themselves to the eye; but all of them have come prepared to the study of that organ, by an intimate acquaintance with medical science in general, and many of them have distinguished themselves by their labours in anatomy, and their improvements in the practice of surgery.' Of such men (added to those already enumerated) were Richter, Himley, Elbe, Rust, Benedict, Quadri, Gräfe, Plenk, Buckhorn, Reisinger, &c.; while the names of Jäger, Rosas, Jüngken, Fischer, Ammon, Walther, Langenbeck, Chilius, Weller, Piringer, and others of the present school, ably retain the character earned by their predecessors.

"The writings and discovery of Beer are too well known to require comment or enumeration here. From a small but interesting pamphlet of his, published in 1813 (*Die Geschichte der Augenheilkunde*), we are first informed of the erection of the ophthalmic clinique in Vienna. In it, he says, that after fourteen years' private instruction in his art, he laid the design of forming a special clinique for this purpose before the emperor. This design was approved of, and a portion of the Imperial Hospital set apart for treating and teaching eye diseases, 'so that,' he writes, 'I actually ascended the clinical pulpit on the 28th of April, 1812, as extraordinary professor of diseases of the eye to the high school of this place.' Being then but extraordinary professor, the students of the university were not compelled to attend his lectures; but men from every part of Europe soon flocked round the great teacher, to profit by his instructions, and take advantage of the many opportunities his position afforded.* In 1815, the extraordinary was converted into an ordinary professorship of practical ophthalmology, attendance on which then became a compulsory part of medical education, and a paid assistant, who resided in the hospital, was attached to the clinique.

"Among the many pupils of Beer, five in particular distinguished themselves: Jäger, Rosas, Benedict, Bringolf, and Dr. Fischer, the venerable professor of ophthalmology, at Prague. Beer was succeeded in the chair of ophthalmic surgery, by the present professor, Dr. Anton Edlen von Rosas, a Hungarian physician, who holds his clinique from ten to twelve o'clock daily. This clinique is situated in the

* "Wardrop and Mackenzie were both pupils of Beer."

second story of the left-hand corner of the third square, near the Pathological museum. It consists of a male and female ward, with twenty beds, most admirably fitted up for the comfort of persons labouring under diseases of the eyes; the beds, constructed on the principle of those for fractures, and made to raise in the upper half, are furnished with curtains, the walls and fixtures painted green, and the windows so arranged as to modify the light. To prevent the chance of contagion from the indiscriminate use of the sponges and napkins, or the vessels, each ward is supplied with a small cistern, placed against the wall, about five feet from the ground, with a siphon-shaped tube attached; on turning the cock of this, a *jet* of luke-warm water plays to the height of about eight inches. To this each patient who requires ablution applies his eyes, and thus, without the fear of infection, syringes the organs in the most gentle and agreeable manner. It is an apparatus that the eye wards of every hospital should be supplied with.

"The annual average number of patients treated in this department is about one hundred and fifty, all interesting cases chosen by the professor's assistant from the general wards of the hospital; and attached to it is an *Ambulatorium*, which affords relief to above one thousand persons in each year. United with these wards is a spacious and well-arranged *Auditorium*, or lecture and operating-room, at one extremity of which there is a raised platform railed off, for operating and examining patients; it is, however, at present rather too small for the accommodation of the vast number of students who crowd this clinique.*

"In this theatre stands a bust of the Emperor Francis I., "*Patris Patriæ*," under whose auspices and those of Andreas von Stifft—the former Protomedicus—it was erected in 1816; and around the walls are portraits of Barth, Prochaska, Rust, T. Sömmerring, Richter, Adam Schmidt, Fischer, Quadri of Bologna, Philip von Walther of Munich, Gräfe, Jüngken, Von Ammon, and our distinguished countryman Dr. Mackenzie. Attached to this clinique is a very valuable and extensive library, chiefly composed of works upon the eye, in different languages, from which books are lent out to the student or visiter weekly, on the payment of a very trifling subscription; there is also a small collection of pathological specimens of the human eye in spirits, many of which are from the hands of Beer. One of the greatest objects of attraction to the foreign visitor in this school, is the magnificent collection of wax-preparations of the morbid eye, and the armentarium chirurgicum of eye-instruments from the earliest period to the present date, both beautifully arranged and in admirable keeping.

"The former are the handiwork of a native artist, who has long devoted himself to the pathological as well as the artistic branch of

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* "I consider the plan of the operating theatre in the London ophthalmic hospital, at Moorfields, the best I have yet witnessed, and I only regret that there is not more occasion to enlarge it."

his profession, and a visit to whose studio I would recommend to all engaged in the study of affections of the eye; as far as my experience and observation extends, this is the finest collection of its kind in Europe.

"The business of this clinique is conducted on much the same principle as the other departments; perhaps it may be a little more methodical. The professor, the patient, and the *Ordinarius*, or attending pupil, occupy the interior of the theatre; the latter then proceeds with the examination of the case, detailing first the objective and then the subjective symptoms, the diagnosis and the therapea. Great pains are taken by Professor Rosas to instruct his pupils in the general constitutional treatment of the patients;—an advantage which this school possesses beyond any other in Europe, except the London ophthalmic hospital in Moorefields. The treatment pursued by Dr. Rosas, in the generality of cases, is very similar to that adopted with such marked success at the latter institution, and already made known to the world by the work of my friend and preceptor Mr. Tyrrell. Under this system, the eye-disease is in so many instances regarded but as an index to the state of general constitutional derangement, and the organ itself treated as a delicate portion of the human frame, and not a mere chemical preparation, to be altered and acted on by the different salts and compounds applied to it, as is now too much the fashion in Great Britain.

"Immediately before each operation, the attendant pupil reads to the class a Latin dissertation upon the case, its history, the objects of the operation, and the probable result. This, at least, is pure clinical instruction.

"After the ordinary duties of the clinique in the theatre are ended, the professor visits those patients unable to be removed from their wards, where the most valuable information may be gleaned from his observations.

"Dr. Rosas delivers a course of systematic lectures on the diseases of the eye, on two days of the week, and his work, 'The Handbook of the Theory and Practice of Eye-surgery,'* is one of the modern works upon that subject most generally read in Germany. Strangers are always admitted free of expense into this as well as the other public cliniques of the *Krankenhaus*.

"Every student intending to become a doctor of medicine or surgery, must attend the ophthalmic clinique during the first six months of his fifth year; and at his final examination (*Zweyte Prüfung*), his knowledge of ophthalmic surgery is strictly inquired into. Every *Civil- und-Landwundarzt* studies in this school during the second six months of his third year, and upon taking his degree he is examined upon ophthalmology by the professor of that branch.

"In order, however, to perform operations on the eye, and practise this branch of medicine as a speciality, it is necessary that an additional year (after the degree has been obtained from the university)

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* "Handbuch der theoretischen und practischen Augenheilkunde, 3 Bd. 1830. Also an abridgment in 1 vol. in 1834. Vienna."

be spent in attendance upon the eye-clinique, at the end of which period some public operations, performed in the presence of the professor, are required as a test of the person's right to practise. This latter course is frequently attended by medical men who have been already in practice, and also by foreigners. A special degree is granted for it.

"The practitioners thus educated, and styled town and country oculists, *Land-und-Stadt-Augenärzte* are distributed throughout the whole of this great empire; no town of any consequence is without one; they are paid by the state, and obliged to administer medicine and advice to the poor in all cases of eye-disease, and also to furnish the board of medical direction with a monthly *Protokol*, or sanatory report of the progress of such affections among the people of their district.

"Rosas is a dexterous and steady operator. In his extraction the patient is seated on a low stool, with the head placed obliquely to the light, and resting against the breast of an assistant who raises the upper lid, while the operator depresses the lower with the middle and forefingers in the usual manner. He makes the downward section with a knife somewhat different from that of Beer, as originally used by him, and figured in his work in 1830. This knife is much shorter in the blade than Beer's, its posterior edge (or back) is also sharp and slightly convex. Holding it between the thumb, and the index and middle fingers, the ring finger bent unto the hollow of the hand, and the little one resting on the cheek bone, he introduces the point at a right angle with the cornea (to prevent its catching in its layers), a little above the transverse axis of the eye, and having entered the anterior chamber, he alters the position of the instrument by depressing its handle towards the temporal fossa, and thus brings the surface of the blade on the same plane with that of the iris. Having passed it rapidly through the chamber and made the counter punctuation, so that a full quarter of an inch of the point has passed through the inner margin of the cornea, he then *draws* it slowly downwards, and slightly outwards, and so completes the section. If the case is one of double cataract he makes the corneal section, and concludes the operation in the second eye before he extracts the lens of the first. He opens the capsule with a Langenbeck's needle, sharpened on its concave edge, and extracts the lens by gently pressing on the upper portion of the cornea with the flat of the needle.

"The object aimed at in having the back of the knife curved is, to give it shortness as well as breadth, and thus avoid pricking the side of the nose; and its posterior sharp edge is to permit of its cutting upwards as well as downwards, and thus not only pass through the cornea with greater facility, but also enable the operator to extend the incision upwards if the original punctuation is too low. Another reason assigned by the inventor of this knife is, that its blade by being sharp at both sides, and forming in its section a compressed ellipse, permits less escape of the aqueous fluid in passing through the chamber, than the ordinary instrument.

" In this manner Rosas operates with the most marked success; but in other hands, especially beginners, his method and instruments are open to many objections. The insertion of the knife at right angles with the cornea, is very liable to transfix the iris, and by twisting the cornea itself, renders its further insertion less smooth and easy, and its cutting back endangers both sclerotic and iris, especially in turning its lower edge outward when completing the incision; and when the iris happens to roll over the back of the knife, it cannot be pressed off with the same facility as when the posterior part is blunt; should the point of the knife get entangled in the iris, he withdraws it and reintroduces it in another place; if the corneal opening is too small he enlarges it with a Daviel's scissors.

" The operations of depression and reclination are much more common in the Viennese school than in England. In this clinique these, as well as the operation for solution, are performed *per sclorotticum*. In artificial pupil Rosas generally adopts the methods of Beer and Langenbeck, but removes the portion of iris drawn through the wound.

" Professor Rosas gives a course of private instruction in operating, which being the same as that of Jäger, will be described hereafter. Foreigners should avail theselves of it, as well as that of his assistant, Dr. Gulz, who will explain to them the collection of instruments and preparations, and procure for them a sufficiency of eyes from the dissecting rooms of the *Krankenhaus*.

" I cannot allow this opportunity to pass without recording the uniform civility and attention that I, in common with the rest of my countrymen, invariably experienced from the professors and assistants, when visiting the different cliniques of Vienna. The English student or physician, who may have been refused admittance as a *foreign visitor* into the medical clinique at Berlin, or has been rudely thrust from the door of the operating theatre of the clinicum of that place, will find a strong contrast to all this in Austria; and yet, though I am compelled to make this remark from what I witnessed in the former place, as an individual, I must return the professors and medical men of that noble and scientific city my warmest thanks for their kindness, hospitality, and professional attention, and in an especial manner am I indebted to Professors Jüngken and Dieffenbach.

" The foreigner wishing to witness Prussian medicine or surgery, will require an introduction, either by letter or the current coin of the realm. In Vienna, his country and his diploma are the only passports he requires to insure him admission, kindness, and attention. It is, however, but justice to remark, that in Berlin the professors receive fees from their pupils."

At page 167 we have an account of the "Young School of Vienna, Auscultation, and Pathological Anatomy.

" Dr. Skoda's private clinique, for diseases of the chest, is perhaps the best school for acquiring a knowledge of the diagnosis of such affections that the foreigner can visit. It is purely a stethos-

copic clinique, recently established by the government, and is to be found in the vicinity of the *Gebäranstalt.* It contains two wards—male and female—with forty-two beds, solely for patients labouring under acute and chronic diseases of the chest, who are chosen from the wards of the general hospital for the purpose of instruction. These wards are in the newly-erected buildings of the *Krankenhaus:* they are remarkably clean, lofty, and though sufficiently warm, well ventilated. As an ausculator, Dr. Skoda possesses an unrivalled reputation, and certainly his diagnosis of heart and lung affections is astonishingly correct. It is entirely in this latter branch of knowledge that this clinique is so remarkable; for the treatment pursued there has in it nothing peculiar except that it is by no means good. It is purely antiphlogistic; consisting of bloodletting, leeching, and blistering, with the use of a few simples, such as tartarized antimony and the tinctura digitalis, administered in large doses. In pleuritic effusion he practises paracentesis much more frequently than any other physician, and does so even in acute cases; for he maintains that it must be performed early if at all, otherwise the lung having become collapsed and shrivelled up by the long-continued pressure of the fluid, will not again expand. He has also punctured the pericardium several times, and with various success. I have since heard, that in one of these cases, to which I have already alluded at page 132, necrosis of the sternum followed, and a medullary sarcomatous tumour spouted from the mediastinum. In acute rheumatism he employs the constant application of iced water to the inflamed extremities, even where there is severe pericarditis present. The hour of visit is from four to half-past five o'clock in the afternoon, and the system of instruction precisely similar to that pursued in the public cliniques; each patient being under the care of an *Ordinarius*, who is required to detail the stethoscopic signs, and those elicited by percussion, &c., daily. The course lasts from two to three months, and is then repeated to another class: it costs thirty florins, or three pounds. The students who attend it are chiefly foreigners, and generally amount to about twenty-four.* Skoda takes great pains with his pupils, and besides the clinical instruction delivers several lectures during his course, upon the pathology of the circulating and respiratory organs, from the cases that have died in these wards; indeed he is the only practical teacher in Vienna who pays attention to this subject; the department of practical medicine and surgery, and of pathological anatomy, being in all the other cliniques perfectly distinct. The students attending the former never hear more of the cases that may have died under their observation till the professor of the latter branch alludes to them several months after, when their peculiarities must have totally escaped their memories.

"In these lectures Dr. Skoda also performs many curious physical experiments, to explain the different sounds of the chest, both normal

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* "There are but six pupils in each of Dr. Skoda's four classes. Two of these classes attend in the forenoon, and two in the afternoon, three times a week."

and diseased; these, as well as the peculiarity of his opinions, will be found in his work, '*Abhandlung über Percussion und Auscultation.*'*

"My fellow-students in Vienna, Drs. Drysdale and Russel, having published a most accurate analytical account of his researches in their work already alluded to, and in 'The Edinburgh Medical and Surgical Journal,' it only remains briefly to mention a few of the most remarkable of them.

"Consonance is a term adopted by Dr. Skoda to express a well-known phenomenon; and it may be here properly explained.

"'A tense guitar sounds in unison with a note produced in its vicinity, either by another musical instrument or by the voice. A tuning-fork held in the air emits a much weaker sound than when placed upon a table or chest. The table or chest must increase the intensity of the sound, by assuming the same vibrations as the tuning-fork, or, in other words, by consonating with it. The note of a Jew's harp is scarcely perceptible when it is struck in the air, and it is heard much more distinctly when played in the mouth. Thus the air in the mouth must increase the sound of the Jew's harp, i. e. must consonate with it.

"'It sometimes happens that the voice is heard more strongly at the thorax than at the larynx, which in itself is sufficient to show that its strength is increased by means of consonance within the chest. The different degrees of the intensity of the voice heard at the thorax, may be explained by the different strength of the consonance within the chest. To ascertain these changes we must discover what it is within the chest that consonates with the voice, and by what circumstances the consonance is liable to be altered.

"'The voice, as it issues from the mouth, is composed of the sound formed at the larynx and the consonating sounds produced in the pharynx, mouth, and nasal cavities. This is shown by the alteration the voice undergoes, by the shutting and opening of the nostrils and mouth, while there is no change made in the larynx. The pitch of the voice is evidently fixed by the larynx alone, and the opening and shutting of the nostrils and mouth has no influence upon it; the articulation of the voice, however, and its timbre, depend upon the mouth and nostrils.

"'As it is certain that the air in the pharynx, mouth, and nostrils consonates with the sound formed in the larynx, there can be no doubt but that the air in the trachea and bronchiæ may also be thrown into consonant vibrations with the sound formed at the larynx. Hence it is the air in the chest, and not the parenchyma of the lungs, which consonates with the voice at the larynx, as the latter seems ill adapted for consonating—being neither stiff nor sufficiently tense. Those

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* "It is remarkable that Dr. Skoda, in common with the other physicians and teachers of this great hospital, has very little private practice in Vienna; and the most eminent practitioners in that city are quite unconnected with hospitals. Dr. Skoda was originally one of the physicians to the general wards of the hospital, and his celebrity as a stethoscopist peocured him this special clinique."

substances, such as air, tense strings, membranes, slips of wood, and thin plates, in which a musical sound is most readily produced, are most easily thrown into consonants of vibrations.

"'Air can consonate only when confined within a circumscribed space. In the open air the human voice and every other sound is heard more feebly than in a room. The air confined within the box of a guitar, violin, piano, &c., consonates with the notes struck on the strings, while the sound is not increased by the consonance of the external air. The strength of the consonance depends upon the size and form of the space in which the air is confined, and upon the properties of the walls which bound the space. It appears that the consonating sound of the enclosed air will be the stronger, the more perfectly the walls reflect the sounds which spread through the air. A space surrounded by solid walls produces the greatest consonance, while in a linen tent the sound is but little increased. The cause of the strengthening of sounds by the speaking trumpet is well known.

"'The air enclosed in a defined space does not consonate with every sound; and should it consonate with several different notes or sounds, it does not re-produce them all with the same degree of strength and clearness. No body can sound in consonance with another, unless it is itself capable of producing the same note, or one whose vibrations form an aliquot part of the note.—*Baumgartner's Physik*, 4*te Ausgabe*, Bd. 1. p. 276.

"'The deductions drawn from the physical principles just referred to, may be used in explaining the consonance of the voice in the chest. The air in the trachea and bronchiæ can consonate with the voice in as far as their walls resemble the walls of the larynx, mouth, and nasal cavities, in their power of reflecting sound. In the trachea, the walls of which consist of cartilage, the voice consonates almost as strongly as it sounds in the larynx. In the two branches also into which the trachea divides, the consonance must be nearly as perfect. On the entrance of the bronchiæ into the parenchyma of the lung they have no longer cartilaginous rings, but merely thin, irregular plates of cartilage interspersed in the fibrous tissue. As the bronchiæ ramify, these plates become smaller, thinner, and less numerous, and at last disappear altogether; and the finest twigs of the bronchiæ consist merely of membranous canals. In the normal state of the parenchyma of the lung, the air in the bronchiæ consonates less strongly with the voice than that in the trachea, in proportion to the smaller number of cartilages they contain. The conditions which increase the consonance of the voice in the air contained within the branches of the bronchiæ that ramify in the parenchyma of the lung, are either that the walls of the bronchia have become cartilaginous, or, if still membranous, very thick, or that the surrounding tissue of the lungs has become devoid of air: in all these conditions the walls reflect the sound more strongly than the membranous walls of the normal bronchiæ; and there must be no interruption of the continuity between the air in the bronchiæ and that in the larynx. If the air in a confined space be thrown into either original or imparted autophonous vibrations, which give rise to sound, the surrounding walls not unfrequently

partake of the same vibrations, and they do this the more readily the less stiff and hard they are.

"'The organ pipe vibrates when the air contained in it sounds. The same is true of the speaking-trumpet. The larynx vibrates with every sound produced in it, and its vibrations are perceptible through several inches of animal substance. The walls of the bronchiæ which ramify within the parenchyma of the lungs will, if the air within them consonate with the voice, be thrown into vibrations as readily as the larynx, and these vibrations may spread through a layer of fluid, or muscle, of several inches thick, even to the parietes of the thorax, and the sounds produced by consonance in the bronchiæ will be perceptible at the walls of the chest.

"'In order to illustrate the above explanation of the difference of resonance of the voice in the chest, Dr. Skoda performed a considerable number of experiments, a few of which are the following:

"'As after death, the bronchiæ are almost constantly found filled with fluid, the lungs themselves are rendered unfit for the purpose of experimenting; we must therefore choose other tissues, whose powers of reflecting sound resemble severally that of the healthy and hepatized lungs.

"'In this respect, a portion of the small intestine represents pretty well the more membranous parts of the bronchiæ, and a portion of the heart and liver, the hepatized lung. If a person speak through a stethoscope placed on one end of a moderately inflated small intestine, consonant vibrations of the voice, in the air within the intestine, may be heard by another person listening through a stethoscope placed on the other end of the intestine. If a layer of a solid or fluid substance be interposed between the mouth of the stethoscope and the intestine, as, for example, a piece of liver, or of intestine filled with water, the sound is heard very indistinctly, and not at all, if the thickness of the interposed substance reaches half an inch.

"'If a passage be bored in the liver, so as not completely to pierce it through, and this be spoken into by means of a stethoscope, accurately fitted into the entrance of it, the voice may be heard along the whole length of the passage, and for a considerable distance on each side, through a stethoscope placed over it, so strong, that it by far exceeds in intensity the voice proceeding from the mouth of the speaker, which is heard by the free air. The voice can still be heard even when a layer of liver, lung, cartilage or bone, several inches in thickness, is interposed, although naturally weaker and weaker, as the thickness of the intersposed substance is increased. If the liver be plunged in water, it is still heard through a stratum of water two inches thick. Similar experiments may be performed with the heart, and with the larynx and bronchiæ. If a piece of intestine, prepared as in the first experiment, be plunged under water, observing the precaution that no water gets into the stethoscope, the voice is heard much louder than if the experiment be made out of the water.

"'These experiments show tolerably distinctly what relation the voice in the thorax holds to the different conditions of the lung. If the voice in the intestine, when not immersed in water, consonate

so feebly as to be inaudible through a layer of lung, liver or fluid, half an inch thick, the consonance in the membranous bronchiæ will likewise be so slight as not to be heard at the walls of the chest. But, on the other hand, as the voice in the heart and trachea, and in the passage bored in the liver, consonated so strongly as to be heard through an interposed substance several inches thick, so will the voice in the bronchiæ of a lung, hepatized or infiltrated with tuberculous matter, consonate so powerfully as to be heard louder upon auscultation at the thorax, than as it issues from the mouth.

"'The consonating voice within the chest differs very much in clearness, loudness, and timbre or quality, from the voice proceeding from the mouth, and varies in itself at different times; but, as the cause of these differences is not well understood, and as they do not afford any diagnostic signs, it is unnecessary to enter more minutely into them here.'

"In fine, the distinguishing peculiarity of Skoda's doctrines is, that he considers all mere shades of difference in respiratory sounds of little or no diagnostic value, and, therefore, abolishes all the names indicating such minute distinctions. He merely takes into account those sounds which are distinct and broadly differing from others, and founds his diagnosis on the combination of different symptoms in each case. Any sound, when it cannot be brought plainly under any of the great divisions, he calls intermediate (*unbestimmt*) and draws no conclusion from it.

"His divisions of the respiratory sounds are—1, vesicular respiration; 2, bronchial respiration; 3, indeterminate respiratory sounds; 4, amphoric and metallic echoes.

"Division of the sounds of the voice:—1, strong bronchophony, or the resonance of the voice, accompanied by concussion of the ear—the voice which penetrates the stethoscope completely; 2, weak bronchophony, or that without, or with imperceptible concussion of the ear; 3, the indistinct buzzing and absence of all sound; 4, the amphoric echo.

"His explanation of the transmission of the sounds through the chest is peculiar to himself. The common explanation of bronchophony and bronchial respiration is, that the lungs being in a denser state, conduct the sound better. But he found by experiment that this is not the cause. He explains it by consonance—viz., that the walls of the bronchial tubes being rendered firmer by being surrounded by condensed pulmonary tissue, are enabled to reflect the sound, and thus the air in the bronchial tubes vibrates in consonance with that in the larynx.

"The school of pathological anatomy being also connected with, and situate within the boundary of the *Krankenhaus*, here claims our attention. I need not now expatiate on its merits; the following description, though necessarily brief and sketchy, shows it to be at present the first in Europe:—

"The pathological museum is to be found in the lower story of the last square adjoining the eye clinique, and may be entered from the passage leading to the dead-house and dissecting-room. It was

commenced many years ago under the direction of Sifft, and was committed to the care of a prosector. Subsequently, a professorship of pathological anatomy was established, and from the time that the present occupant of that chair, Dr. Carl Rokitansky, was elected, may be dated the origin of its celebrity, and the rise of the young schools of Viennese medicine. This splendid collection of morbid anatomy, undoubtedly the most interesting and extensive in the world, contained at the period of my visit five thousand three hundred and eighty-four preparations, some dry, and others preserved in spirits.* The room in which they are placed is now, however, much too small, and in many respects ill adapted for them, and their arrangement is neither showy, elegant, nor judicious. This museum is particularly rich in specimens of diseased bones. There are thirty-seven examples of deformed pelves, well worthy the attentive examination of the accoucheur;—some of these have been already made known to the world by the labours of Professor Nägele, of Heidelberg. There are four hundred crania, three hundred of which are the skulls of persons who had been affected with different descriptions of mental derangement, and died in the adjoining lunatic asylum; these will amply repay the examination of the phrenologist, and all those engaged in the study of mental diseases, as well as the craniologist, who will find in them examples of all the peculiarities of head to be found among the various natives of the Austrian empire. Each of these skulls contains within it a brief history of the cause and peculiarity of the mania with which the individual was affected. Among the collection of heads, are several marked with syphilitic caries; these are all of a very old date, and no new ones have been received for many years; a strong proof of the declining virulence of this disease. Here the visitor will be shown many specimens of *Osteophite*, a thin lamina of bony matter, which becomes deposited on the surface of the skull, particularly in pregnant or parturient women; its most frequent seat is on the interior of the parietal bones, or on the bones of the face. So certain are the pathologists of this school of its being a test of pregnancy, that I have frequently seen them pronounce with accuracy on the condition of the womb, merely by removing the calvarium. There is also a numerous assemblage of diseased spines, and some curious rachitic skeletons; and also a normal skeleton, seven feet high. The collection of diseased hearts and blood-vessels is very extensive, and the mode of preserving them in a dry state is worthy of attention. In the same compartment are several examples of aneurism of the tricuspid valves; five splendid specimens of osteocartilaginous deposit within the uterus;—two of these are, perhaps, the largest and most remarkable in existence; and also some dry preparations of the cists of ovarian dropsy, will require the special notice of the pathologist. The collection of monstrosities is curious and extensive; among them are some acephalous fœtuses, with the spinal

* "It has been increased from six hundred to this number since 1817."

canal open posterously, in which there is also one half of a dorsal vertebræ supernumerary. I mention this rarity, because there is also in the same museum an adult skeleton with a similar addition between the last lumbar and first sacral vertebræ, which, as might be anticipated, produced lateral curvature.

" The specimens of diseased intestines, particularly those exhibiting tubercular deposits, ulcers, and perforations, the result of the typhus abdominalis of that country, as already spoken of at page 133, are very valuable.*

" One of the greatest curiosities in this museum is the entire body of a child, aged about five years, who was affected with scaly lepra, in some parts resembling elephantiasis. This is from the hands of the celebrated anatomist Prochaska: it is preserved in a standing posture, and is the very best instance of modern embalmment I have ever seen; the features are very little altered, and the flesh remains as plump and natural as life. It is far superior to those in the Hunterian museum in the London College of Surgeons, and its mode of preparation is now quite unknown. It is much to be regretted that as yet no catalogue exists of this valuable collection; one is, however, in process of completion by the professor and his assistant Dr. Engel. The bodies of *all* who die within the walls of the *Allgemeine Krankenhaus* are removed for examination to the dead house and dissecting rooms (*Todtenhaus* and *Sectionskrmmer*), which are situated in the open court behind the museum.

" The method of teaching pathological anatomy is conducted on much the same principle as that of the clinical instruction, and the school is chiefly frequented by foreign medical men. From eight to ten o'clock every morning, the professor and his two assistants attend in the dead house, and carefully examine the majority of those bodies that have died of any particular or interesting disease; for to examine all, or one-half, would be impossible within the time; generally from four to six bodies are opened daily, and a short notice of the symptoms, diagnosis, and treatment, &c. is sent with each cadaver. The professor, or one of his assistants, demonstrates the morbid appearances to the class, while the other (the junior) who sits at the rostrum, transfers his observations to the records of the museum. Any lesions of organs, or diseased appearances that may then present, are removed for preparation. This course, which lasts the entire year, is public to all who desire to visit it: it is, however, as I have already stated, chiefly frequented by foreigners and the practitioners resident in the hospital; for the students of the university are generally engaged at the practical cliniques at this hour.

" Professor Rokitansky delivers a public course of lectures upon pathological anatomy in the museum three times a week, on Mondays, Wednesdays, and Fridays, from three to four in the afternoon.

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* " Some of the best preserved specimens of diseased intestines that I have seen, were those preserved by spreading the preparations out on plates of glass, drying them quickly, and varnishing them as soon as dry, by my friend Professor Hasse, at Leipzig.—See his valuable work, Specielle pathologische Anatomie. Leipzig: 1841."

This professorship being as yet but an extraordinary one, and attendance upon this course not being *absolutely* required by the university, few Austrian students, as might be expected, are to be found at these lectures. The professor's delivery is by no means good, and his language difficult, for those who are not natives of Germany, to understand. Till within the last year or two, the very name of this distinguished pathologist was unknown in this country: his early writings consisted, for the most part, of scattered papers and monographs, published in the '*Wiener medicinische Jahrbücher*;' he has now, however, produced a work that must acquire for him European celebrity, the '*Handbuch der pathologischen Anatomie*.'*

"Rokitansky resides in the detached building of the first great square, and his private microscopic preparations are well worth visiting; his salary is paid by the government, independent of the sums received from his private pupils, which must now be considerable.

"There are two paid pathological assistants; the situation is obtained by *concours*, and lasts for eight years. The present assistants are Drs. Dlauhy and Engel, and the late assistant, Dr. Kolletchka, now the physician to the Jewish hospital, is also a pathologist of undisputed merits and acquirements.

"It is Rokitansky's *private course* that more particularly demands the foreigner's attention. In this he has several classes during the day, and from eight to twelve persons in each class; those attending this course are daily required in their turn to perform an autopsy in the dead house—to describe the morbid and healthy appearances they meet with in each cavity or tissue—and answer the questions of the professor on the subject, as in the clinical wards of the hospital.

"The class having been thus grounded in the principles of the science, and their eyes made familiar with diseased structures for a month or five weeks, they are then conducted to the museum, where the professor explains the preparations systematically, and offers some observations upon the theory of pathology, as well as a *resumé* of his own peculiar views, and finally exhibits to his pupils his microscopic collection.

"The whole course lasts about six weeks, of which from eight to ten days are employed in the museum; the time occupied is an hour a day, and the cost is thirty florins, or three pounds. The senior assistant also gives a private course, which I would advise the visitor likewise to attend, as besides the instruction he receives, it affords him an opportunity of examining as many bodies as he wishes.

"Different from all other pathologists, Rokitansky does not engage in the study or treatment of disease during life—he is not a practical physician, and seldom sees one of the many hundreds of cases whose bodies he dissects. This has been loudly exclaimed against by many, who say that here morbid anatomy has completely usurped the place of pathology; but though it presents an anomaly peculiar to this school, it undoubtedly possesses many advantages.

"We all know how difficult it is to dispossess the mind of any

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* "Wien, 1841,—the third volume appeared first."

previously-conceived and long-cherished idea, by which we either treat, or explain the phenomenon of disease. We have all witnessed how frequently men genaralize from a few particular cases, and how easily they find the morbid appearances to agree with the previous diagnosis, and if they do not find such, they fancy that they do. This has arisen from the physician who treats the case—the pathologist and the morbid anatomist being one and the same person: and the school of Vienna, previous to the present mode of examining diseased structures, offered a well marked example of this defect. The *Protokols* of the different medical sections teemed with numbers of cases whose *post-mortem* appearances fully corroborated their previous diagnosis, and yet but little advance was made in pathological science in those times. Furthermore, although I do not believe the diseases have altered, yet we now find pathological appearances quite different from what they were said to be prior to the introduction of Rokitansky's method. He first emancipated himself and his school from this fault, and now teaches general pathology and morbid anatomy (unconnected with, and unobstructed by, either diagnosis or theory) solely from the changes observable after death, and the solid grounds of observation and experience.

"This school comes nearer to the principle aimed at by the immortal Laennec than any other since his day, and in many respects it surpasses the original. Discarding all presumptive hypotheses, it is characterized by a tendency to take objective and natural historical views of the organic and structural changes accompanying disease; and also, as far as possible to discover the peculiar morbid products which distinguish certain morbid states; thus it is purely inductive, and when it admits of speculation, it is merely as to the *mode of origin* of these changes. As an example of the tendency of this school, as well as of the professor's style and mode of analysis, I may again refer to the observations upon typhus, at page 133.

"As a writer, Rokitansky is much and justly admired; his language, ever forcible acd explicit, expresses his meaning with all the clearness and perspicuity of which the German tongue is capable. He may now be regarded as the head and leader of the young school of Vienna, which the talent and labours of Skoda, Helm, and a few others have so ably contributed to create.

The readers of this Journal, who have attended the instructive meetings of the Dublin Pathological Society, will have no hesitation in coinciding with us in opinion that the plan of teaching pursued by Rokitansky is little better than useless. He must have observed, that the cases brought forward at that Society, unaccompanied by an accurate detail of symptoms, and faithful records of the effects of treatment, were little more than worthless; as specimens of diseased structure, they were interesting, no doubt, to the mere anatomist, but any of our museums could have furnished perhaps infinitely better examples of the same alteration of structure.

It is not in this way that the science of medicine can be advanced; that object can only be attained by placing on record an accurate account of the symptoms present during the life of the patient, the result of treatment, and the morbid alterations disclosed on dissection,—this is the true method of studying Pathology, and it is for this reason that the works of Andral, Cruveilhier, and others who have pursued the same path of investigation, have succeeded in leading to improvements in the practice of Medicine.

It is unnecessary for us to show the vast category of diseases, the nature and peculiarities of which, he who studies Pathology (so to speak) after the manner of Rokitansky must for ever remain ignorant of. Take for instance the very disease Mr. W. refers to at such length, viz., *Typhus*. Surely the appearances found on dissection of those who have died of that disease throw but a *negative* light upon it; they show what it *is not*, rather than what it *is*.

In conclusion, we have to thank Mr. Wilde, on the part of the profession, for the invaluable boon he has conferred upon us by the publication of the work under consideration. We cannot however, conclude this notice, without strongly recommending all our readers to procure the work, and we guarantee that they will not only be pleased with, but amazed at the immense quantity of highly valuable and instructive matter he has laid before them, the collection of which reflects the highest credit upon his industry and talents.

A Practical and Theoretical Treatise on the Diagnosis, Pathology, and Treatment of Diseases of the Skin; arranged according to a Natural System of Classification, and preceded by an Outline of the Anatomy and Physiology of the Skin. By Erasmus Wilson, &c., &c.

We have no hesitation in saying that this is decidedly the best work on the subject of cutaneous diseases that has appeared for many years. The description of each disease is full, lucid, and accurate, and the treatment recommended is extremely judicious. Mr. Wilson has prefaced his remarks on the pathology of the skin, by an elaborate and valuable essay on the anatomy and physiology of that structure. Every part of the work evinces great research and accuracy, and we feel great pleasure in recommending it to our readers. The type and paper are of the highest order.

SCIENTIFIC INTELLIGENCE.

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1. *Vesico-Vaginal Fistula.*—In the Number of the "Archives Générales de Medecine" for March, 1843, we find a highly useful paper on Vesico-Vaginal Fistula from the pen of M. Lallemand, Professor of Clinical Medicine at Montpelier.

The Professor commences by detailing some very interesting cases of this disease, which we regret our limits will not permit us to lay before our readers; we shall, therefore, pass on and give the general observations, as nearly as possible in his own words.

Causes.—Amongst all the Vesico-Vaginal Fistulæ I have either seen, or been consulted for, by letter, I have never met with one which was not caused by a difficult parturition. I am aware that the perforation of this partition may be produced by a cancerous or venereal ulcer, by the presence of stone in the bladder, &c. Such cases are to be found in different scientific reports, but they must be exceedingly rare, for I have not met with a single example. In two cases the vesico-vaginal septum was ruptured by the forceps employed for the extraction of the fœtus, but in all the other cases the fistula was the consequence of circumscribed gangrene of this septum, caused by the continued compression of the septum between the head of the fœtus and the arch of the pubis, owing either to the head of the fœtus being too large to pass through the pelvis, or to the extreme rigidity of the soft parts, delaying the different stages of the delivery. This latter seems to be the more general cause of gangrene, for in almost every case the patients were *primipares.*

Situation.—We can readily conceive why almost all fistulæ occur in the median line. I have seen a case, however, in which two fistulæ existed, one about seven lines in length extending transversely, and to the right of the neck of the bladder, the other about three lines to the left of it; so that the median line was intact. I confess my inability to explain this singular circumstance, for most assuredly both fistulæ were the result of a tedious labour. I have also seen a fistula situated at the left of the median line, but it was caused by the introduction of the sharp crotchets. This is a very rare situation. Some are disposed to attach great importance to the fact of the fistulæ, being situated deep in the vagina or near the orifice, asserting that it is much more difficult to cure those at a distance from the neck of the

bladder, because they admit the urine to escape more readily. This is quite erroneous; there is no difference in *this particular* between urethro-vaginal, and vesico-vaginal fistulæ; but as in the former, the fistulous opening does not extend into the bladder, the urine cannot escape into the vagina until it has passed through the urethra, being then under the same circumstances as when passed voluntarily; besides it can be retained as long as in the healthy condition of the parts, and consequently cannot be any serious annoyance to the patient. Some women, in fact, can scarcely perceive any difference in the manner in which the urine is expelled; but in every instance where a fistula extends into the bladder itself, the urine is constantly dribbling, and the infirmity becomes more or less intolerable. There are some, however, who can retain their urine in certain positions, even under these circumstances, but this depends altogether upon the situation and shape of the fistula. When the opening is from four to five lines in length and runs transversly, is regular, and its edges thick, the urine can remain in the bladder an hour or two, particularly if the body is erect and immoveable; but in every movement causing the contraction of the abdominal muscles, the bladder is pressed on, and a certain quantity of urine is expelled per vaginam. In general, in such cases, the decubitus on the back is the most unfavourable position, for then the uterus ascends and draws with it the posterior lip of the fistula. But what proves that the power of retaining the contents of the bladder does not depend on the situation of the fistula, is, that this power increases in proportion as the fistula diminishes in size, whether this effect be the result of a spontaneous cure or of medical treatment. In the case of Catherine Guyard, the first operation caused a cicatrization of nine-tenths of the opening, and the urine, which before the operation was constantly escaping into the vagina, could now be retained for three or four hours. In the case of Mad. G., the first operation almost completely closed the opening, which was an inch and a half long, leaving only two small holes at each extremity of the cicatrix, through which a few drops of urine escaped, and which Mad. G. thought was a leucorrhœal discharge; yet in both these cases the fistula was situated only a few lines distance from the womb and of course far from the neck of the bladder. Thus we see, that the finedrawn distinction which some make between fistulæ situated at the neck and the base of the bladder, with reference to the facility they present to the passage of the urine into the vagina, is not founded on fact, and the above examples I have detailed ought to convince us that every part of the vesico-vaginal septum is in this respect in a similar condition. If the urethro-vaginal fistulæ present any peculiarity in this respect, it is when they are situated outside the muscular fibres which contract the bladder. There is no line of demarcation to be drawn between the urinary fistulæ of women, except their particular situation; this it is, that renders the infirmity in one almost intolerable, whilst in another we can hardly call it an inconvenience.

It has also been asserted, that our manipulations will be rendered

more or less difficult, according as the fistula is close to, or at a distance from, the neck of the bladder; this may be true, when we remove the edges of the opening by the scissors or the bistoury, or when we employ sutures; but the objection is ungrounded if we employ cauterization by nitrate of silver, or hot iron, for in this latter case, the mere situation adds but little to the difficulty of the operation.

I ought in this place to allude to the fistulæ which extend to the neck of the womb, not because their treatment is more difficult, but from the fact of the locality and vicinity to such an important organ rendering them generally more serious.

From our almost daily seeing cases where the womb has been ruptured without much danger, where it has been cauterized without any serious consequence, and even a portion of it excised, with success, more or less authenticated, we become accustomed to look on this organ as endowed with a degree of insensibility to solutions of continuity, and operations, and to confide in its great powers of reparation. As I am aware that many unfavourable results have been suppressed by certain practitioners with as much care as they have taken pains to puff off their success, I have considered it my duty to make known the grounds on which my apprehension is founded.

About six years ago, a young woman of robust frame, entered the Hôpital St. Eloi de Montpelier, with a vesico-vaginal fistula, about six lines in extent and situated immediately in front of the neck of the womb, through which the urine was constantly flowing. I cauterized the circumference of the opening very frequently with nitrate of silver. When the parts appeared disposed for union, I applied the *sonde-airigne;* the hooks penetrated that part of the bladder joining the womb, and probably part of the womb itself. On the second day she complained of violent pains in the pelvis, on the third, they extended to the abdomen, notwithstanding she had been copiously bled in the meantime. In the evening I withdrew the instrument, and applied leeches, fomentations, &c.; soon, however, delirium set in, and she manifested all the symptoms of gastro-enteritis and hepatitis. She survived these attacks, but fell into a state of languor and marasmus; her intellect became impaired, and she died the ensuing year. At the examination of the body, traces of chronic peritonitis, and organic disease of the liver, were found, together with a large effusion into the cavities of the brain. There can be no doubt that the operation was in this case the *point de départ* of all the symptoms, which finally terminated in death; yet for some time I was not satisfied in my own mind, that we could ascribe the symptoms to the operation as a cause; but the occurrence of a similar case left me no room for doubt. Last year my friend Doctor Cauvière, requested me to operate on a case of vesico-vaginal fistula under his care. I found the anterior lip of the neck of the womb lacerated, and the opening of the fistula situated in the interval between the torn edges. At first I had almost determined to abandon the operation, but the desire to relieve the unfortunate suf-

ferer, and my anxiety to exhibit the different steps of the operation, surmounted my objections. During the first two days everything went on well, but after my departure a series of symptoms set in exactly like those abovementioned, and though the instrument ("*sonde airigne*") was withdrawn, the symptoms resisted the most active antiphlogistic treatment, and the patient died on the eighth day from the period of the operation. The pathological appearances revealed at the autopsy, resembled those observed in the former case in every particular.

It is evident then, that these consequences must be attributed to the operation, and that they are induced by the *proximity of the uterus itself, and the reflection of the peritoneum from this viscus on the bladder*. If the second case had not come under my observation, I should have concluded, that there was in the first patient some peculiar state of the constitution predisposing to any sudden explosion of inflammations, but the close resemblance between the nature of the symptoms, and the pathological alterations found in both cases, show, that they were produced by the operation. It may be supposed, that like disastrous consequences would not have followed a different mode of operation, but we must bear in mind, that the same objections are to be urged against any plan of proceeding implicating the tissues in this particular locality.

This, then, is the only instance in which the exact situation of the fistula is of any importance, and in such case the attempts at cure ought not to exceed cautious cauterizations.

Form.—The shape of the arch of the pubis, against which the head of the fœtus is pressed, satisfactorily explains why most of these fistulæ take a transverse direction; but even in cases where the slough is round, the fistula does not retain this shape, for as the cicatrization advances the opening diminishes by the contraction of its edges; but their approximation is more easily effected in the direction of the vagina than from side to side, owing to the transverse direction of the rugæ of the vagina.

Size.—It is clear, that the size of a fistula, *cæteris paribus*, will influence the facility of cure and indicate the peculiar means to be employed. The loss of substance may be so great as to preclude all hope of recovery. I have seen three such cases; in two of them the entire septum, from the neck of the bladder to the os uteri, had sloughed away; in the third, the loss of substance was less extensive, but there existed a recto-vaginal communication, so that both urine and fæces constantly occupied this disgusting *cloaca*. In such cases the surgeon can only exert his ingenuity to devise some mechanical means of relieving the patient. Between such extreme cases, and the smallest fistulous opening, there are of course many intermediate varieties.

It may be asked what size of the fistula ought to deter us from attempting the cure? It is impossible to fix on any particular limit; but we may say, that *we ought always to be able to bring the edges of*

the fistula into complete contact, at least, for the greater part of their extent, for though we cannot obtain a complete union on the first attempt, we increase the facility of treating the fistula by diminishing the extent of the opening.

The largest fistula I ever cured was eighteen lines in its greatest diameter, but it is the antero-posterior diameter which is of the most importance to consider. The straightest fistulæ, *cæteris paribus*, are the most easily cured; I insist strongly on this last proviso, for I have been frequently deceived by overlooking it. We must not forget that the cicatrization is a process over which we can have but little influence, and we ought not to attach too much importance to trifling local differences, to the neglect of the disposition of the general economy.

The size of the fistula should, however, determine the particular mode of treatment to be employed. In all cases where the mere intumescence of the edges of the opening suffice to keep them together, we should content ourselves with simple cauterization. These fistulæ contract, in proportion as the cicatrization advances, owing to the interstitial absorption common to all newly formed tissues, and which is established for the purpose of consolidating and rendering them more compact. When this process, which occurs in all kinds of cicatrices at a particular period, has ended, the contraction of the opening remains stationary; but when the lips of the fistula come into contact, and are preserved from the action of the urine, they are no longer in a fit condition to unite, for they are hardened and incapable of undergoing any other change. When matters have reached this point they may continue so for the rest of life; no matter how small the opening be, it will not close, and will give rise to as much annoyance as when of larger size, for it allows quite enough of urine to flow through, to excoriate the soft parts and to diffuse around the patient a disgusting stench. What ought we to do under such circumstances? To excite acute inflammation in the parts, so as to produce an adhesion of its surface by the exudation of an organizable plastic matter. Now, acute inflammation is always accompanied by turgescence; if, then, the opening be small, the mere swelling of the parts may be sufficient to close it. At this crisis, if the urine can escape more readily by another passage, than through the fistula, the plastic lymph will have sufficient time to become organized, and the parts will be united ere the inflammatory action has ceased. All that is necessary, therefore, is to cauterize the parts, and to introduce a catheter into the bladder to effect a cure, provided the parts themselves are disposed to heal. Fistulæ of a larger size can also be treated in this way, provided we allow a long interval between each operation, and do not leave the catheter too long in the bladder; for lying in bed weakens the patient, besides we ought always to give the parts time to contract to the fullest extent before proceeding to another operation. There is one other circumstance, besides the great extent of the fistula, which should dissuade us from applying even cauterization, viz., *our inability to excite a sufficiently active inflam-*

mation, for if the parts be not disposed to unite, our atempts at cure will only weary out the patience of the sufferer, and bring surgery into disrepute; in short, the cure ought never to be attempted except in cases where the constitution is favourable, and where we can bring the sides of the fistula into contact, and are sure that the turgescence of the parts after the cauterization will be sufficient to keep them in apposition.

Duration.—If the means for approximating the parts were employed immediately on the sloughs falling out, it is more than probable that we should obtain the complete union of as much as could be brought together; but once the acute inflammation has ceased, it will be necessary to reproduce it by cauterization in order to perfect the cure; the farther from the period when the sloughs fell out the less chance of success.

In every case in which I succeeded in rapidly effecting cure, a year had not elapsed since the accouchement. The cicatrix should be always partly destroyed by the cauterization in order that the union may be completed. The union is retarded by the constant irritation of the vagina, from the urine, which, in its passage through the opening, deposits its calcareous salts, excoriates the skin of the labia and thighs, and the patients are tormented day and night by burning and scalding, by shooting pains, and by the unavoidable odour of urine which surrounds them; condemned to absolute seclusion, they are deprived both of exercise and air, and their sleep is destroyed; their disposition is changed, their digestion enfeebled, their constitution undermined, their temper becomes ascetic, and they fall into a hypochondriacal or an hysterical state; the least cause being sufficient to excite alarming nervous symptoms. Again, on the one hand, the parts most likely to bear operations are too sensible and but ill fitted to become the seat of healthy inflammation; and on the other, the constitution, impaired and irritable, is in a state unfavourable to the production of materials for a good cicatrix, and to endure pain. There are, however, some constitutions that can bear up against the effects of a fistula, and others, in which these effects are not very distressing. Of this we should be aware, for, all things alike, *the chances of success are in inverse ratio to the duration of the disease.*

Local Condition.—Besides the extent, situation, and direction of these fistulæ, we must also take into account their *vital properties.* In some cases the whole of the vesico-vaginal septum is very thin, or else the exact spot where the fistula is situated is very weak, whilst the remainder of the septum is pretty thick and strong. In such cases it is very difficult to bring the edges of the opening into exact coaptation, or to excite a healthy inflammation in them. In other examples, the edges of the fistula are extremely hard, cartilaginous and encrusted with the salts of the urine, which are precipitated so abundantly as to mat together all the hair on the external labia. These circumstances are not an objection to the performance of the operation, but they show that the irritation has been propagated

to the kidneys; and should be treated by frequent baths, copious drinks, injections &c., for the largest *sonde airigne* will become blocked up by the calcareous matter, and then the urine will quickly make its way into the vagina through the abnormal communication.

The same inconvenience will arise from a chronic cystitis, for the abundant glairy mucus will just as effectually block up the catheter; besides, in this state of the mucous membrane, the presence of the instrument will be extremely painful, if not intolerable. We must, therefore, before attempting any operation, direct our attention to the removal of these two conditions of the urinary organs, or our attempts at cure will end in complete failure. We may also excite inflammation of the bladder, by a cauterization too severe or badly performed; under these circumstances, we must first relieve the bladder before introducing the *sonde airigne*, no matter how healthy the edges of the fistula may appear to be. It sometimes happens, that the vagina is highly injected, bloody, excoriated, and exquisitely painful, owing to the constant passage of urine, and this condition can of course only be remedied completely by closing the communication; but it can be very much relieved by baths, and frequent bland injections into the vagina. Chronic inflammation of the vagina acts just like chronic cystitis in delaying the operation, and should be treated in the same way; if it be well marked, it evinces a condition of the parts very unfavourable to the successful issue of any kind of operation.

The circumstances favourable for operation are, that the vesico-vaginal partition should be pretty thick, as also the edges of the fistula; the mucous membrane of the bladder and vagina healthy, and the urine free from any excess of salts or mucus.

Temperament and Constitution.—It is no doubt to differences of constitution, that we ought to ascribe the great difference in the results of operations undertaken for the cure of the disease under consideration. When we see, in some cases, the opening, varying in size from 15 to 18 lines, either completely or almost completely uniting after the first operation, and in others the smallest holes resisting every kind of treatment, it is to the difference of constitution, and not to the small or large size of the fistula that we should ascribe either the success or failure of our treatment. I have already shown that the situation of the fistula is of little importance, provided it be not close to the uterus. The three largest fistulæ I ever cured opened into the base of the bladder, yet I have often been unable to effect a closure of the smallest ones, close to the urethra, though I employed cauterization, sutures, and the *sonde airigne*. I am anxious to impress these facts on my readers, for I have frequently promised a speedy cure to my patients, and have frequently had cause to regret it, when my efforts ended in complete failure. In these cases I had merely attended to the local disease, and had overlooked the general constitution. We can easily conceive how a fistula of long standing will react on both the physical and moral constitution of the patient; they become impatient and irritable, and should you promise a speedy cure, and do not succeed in effecting it, they lose

all confidence in your means, and cannot be persuaded that a small aperture will give exit to a certain quantity of urine until you have succeeded in closing it perfectly. In such patients, no matter how favourable the wound may appear, or with what degree of facility you excite healthy inflammation, your prognosis should be extremely guarded; for in this peculiar state of the patient, the smallest aperture may require very many repetitions of the operation, to the no small annoyance and discouragement of the patient.

All these differences depend on the constitution, and not on the nature of the fistula. The ancients paid great attention to the general constitution of the patient, but with us it appears to be the fashion to study minutely the *disease*, and to neglect the *diseased*. General doctrines are indispensable in theory, but in practice we must learn to *individualize*.

I have had more success in patients of a robust habit, and such as led an active, busy life, such as peasants, than in other classes. Those most unfavourable for operation are of a lymphatic, nervous, and irritable temperament.

Therapeutic Means.—I have already said that small fistulæ may be cured by cauterization, a catheter being in the meantime retained in the bladder. We may also endeavour to cure those varying in size from four to five lines in diameter, allowing sufficient time to intervene between the periods of operation.

It is often asked, what method of treatment should we prefer. Cutting instruments, such as bistouries, scissors, and lancets, are very difficult to employ even when the fistula is near the neck of the bladder. Of this I have had ample opportunity of judging, and have consequently abandoned the use of them. It is difficult to cut the edges of the fistula evenly and uniformly, and if a bleeding surface be applied to one which has not been cut, of course no union will take place.

With cutting instruments we are obliged to remove a considerable quantity of soft parts, and so increase the extent of the opening, without deriving any particular advantage. We do not by this method produce an intumescence of the edges of the wound, which is of the greatest service in bringing the parts in complete coaptation, and it also serves to arrest the passage of the urine into the vagina, so effectually, that the patients often fancy themselves cured of their infirmity; besides, we cannot by excision procure a more speedy adhesion than after cauterizations, nor are the parts more disposed to contract, or form adhesions.

We ought to abandon cutting instruments, seeing that they possess no real advantage, and that their employment is exceedingly difficult. The actual cautery should always be employed when we wish to destroy certain parts, to level inequalities and particularly when the opening is great, or else very small; when this opening is somewhat concealed, sinuous, and when its course cannot be followed by a stick of nitrate of silver. The cautery ought not to exceed a line in diameter at its thickest part; the shank ought to be much smaller,

that it may retain less heat. We should have them of different shapes, for straight or sinuous fistulæ, as may be required. A demispeculum will protect the posterior wall of the vagina, whilst the fistula is exposed, and the superior wall should be protected by a spatula. When the orifice of the fistula is of moderate size, and regular, it matters little whether we use the actual cautery or nitrate of silver, and we should pay respect to the choice of the patient. When the fistula is very narrow, we should use a piece of nitrate of silver expressly prepared for the purpose, for an iron sufficiently small could not retain sufficient heat to be of any use by the time it would be applied.

As to the best means for retaining the parts in contact, I prefer the *sonde airigne* to sutures, particulary in transverse fistula, and these are the most common, for amongst twenty-one cases I only met with one whose direction was oblique. Are sutures more easily applied or less painful? most assuredly not. Moreover, they do not effect a closer and more exact apposition of the parts; and they are open to many other objections; with the *sonde airigne*, we can increase or diminish the pressure at will.

The author ends his paper by giving a long description of the *sonde airigne*, which, unaccompanied by any woodcut or lithograph representation, we fear, would not be very interesting or even intelligible to our readers. We hope, however, soon to see it in the shops of our instrument makers in this city.

Hæmatemesis.—*A remarkable Case of the Affection in a young Individual, who up to the Moment of Death was in excellent Health, by* Dr. Edward Laroche. A young soldier of the 5th regiment of the line, quartered at Anvers, was seized, without any premonitory symptom, with profuse vomiting of blood, about 8 o'clock in the evening. At first some portions of food were rejected along with the blood, but in a short time the vomited matter was found to be pure unmixed blood; the patient complained of weakness, cold sweats broke out over the face and hands, and a return of the vomiting came on, after which he fainted and soon died, before his medical attendants had time to come to his relief. This man had always enjoyed good health, and had never applied to the surgeons of his regiment; neither was he addicted to drunkenness. On the day of his death he had performed his duty without making complaint of suffering, and had dined with his usual appetite. At the *post mortem* examination the stomach was found filled with fluid blood, and its internal surface was washed with great care, he was unable to discover the least ulceration, in some points the mucous membrane was a little softened; there was no rupture of any of the vessels of the stomach. The intestines and all the other organs were perfectly healthy.—*Archives Générales.*

It is to be regretted, that the author has not more minutely described the state of the other organs, or whether any of them was the seat of ecchymoses or petechiæ.

Causes of Strangulation and Death in Cases of Hernia, or the Signs of constitutional or humoral Disorder in such Cases. (Some Statistics; the Treatment; Dr. O'Beirne's Views, &c.) By T. Wilkinson King, Esq.—In the Guy's Hospital Reports for the year 1838, I published some statistics to show that most herniæ exist for years before they become subject to violent strangulation; that the mean duration of three-fourths of the well-recorded cases had been between 15 and 25 years before danger arose.

The following were my conclusions from a considerable series of facts.*

"First. Most herniæ being of old standing before they become seriously strangulated, this result is not attributable to the state of the sac, but to that of the bowel; in which defective nourishment and power of vessels leads to more ready tumefaction; and all this seems attributable to the age and the organic deterioration belonging to it.

"Secondly. The common and chief danger is from a peculiar and unhealthy kind of peritonitis; the consequence, probably, of the same constitutional decay or decline of organs which induced the strangulation.

"Thirdly. The above facts lead to the conclusion, that prompt surgery, to remove the cause of inflammation, and the most cautious medicine to obviate, and not excite, inflammation, and to add nothing to the oppressed condition of the patient, are indications even more pressing than has been hitherto maintained, at least among authors and the generality of surgeons."

I am now enabled to extend the facts of my case, and, I hope, add strength to an argument, which, if it has hitherto found no favour, has met no opponents, and which, if just, is important enough to claim attention, both for its own sake, and for the reason that it reflects more or less light on the many affections of declining life.

I think it would be a consideration of great importance, if it were only true, that the ordinary duration of hernia before strangulation is 15 or 16 months; especially if we take into the account the fact that the age for strangulated hernia is most commonly after the 35th or 40th year of life.

The grand fact of my case is, that above half of the cases of hernia that are met with requiring immediate aid may be proved to have pre-existed for a period of 15 or 25 years, or even 40 years.

This is as undeniable as it is important; and it seems to me as striking as the mass of surgical writers seem to have thought it insignificant. But it is to a cumulative argument that I attach the greatest import.

Muscular exertion and local conformation are the causes of hernia: but the final or serious strangulation, at least four times out of five, is produced many years later, when a totally different state of parts and constitution has become developed. The acute strangu-

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* See Guy's Hospital Reports, No. 7, p. 390.

lation of young persons, and its proper train of comparatively healthy symptoms, may find its analogy on rare occasions at any period of life. It is characterized by narrow stricture and acute reparative actions, and may be devoid of all the morbid traits of old-standing hernia when strangulated, which is more like what is called incarcerated hernia, but devoid of healthy action, and fraught with signs of non-reparative inflammations,—diffused actions, unorganized and pernicious effusions.

The symptoms, the course, and the post-mortem appearances of the latter case, are specific.

A few numerical facts will, I think, place this view in a somewhat stronger light than my former tables.

In the last number of the Guy's Hospital Reports,* 44 successive cases are detailed. There appear to have been—

7 cases, more or less recent;
1 ,, had existed for some time;
28 ,, ,, stated numbers of years.
The mean duration of all these is 13 years.
2 cases had existed for some years; and
6 ,, ,, several or a number of years.

Of the same cases there were—

Submitted to operation	18
Successfully (one, æt. 9)	9
Unsuccessfully (the gut rent in one, æt. 21)	9
The mean age in the 8 cases of successful operations, was	43 years.
Unsuccessful	$59\frac{1}{4}$
22 reductions by taxis, &c. . . .	$43\frac{5}{7}$

Three other cases were in the last stage, unreduced and fatal; one was a reduction fatal by continued inflammation.

In the years prior to that in which the last cases occurred, there were admitted into Guy's 55 cases of urgent herniæ in two years, or 112 weeks: 17 between November and May, and 5 between June and October. And by setting the dates of these cases beside those of the cases lately published in our Reports, I find that of 100 cases twice as many instances of strangulation are admitted between November and April as between May and October; and that half of the whole number are admitted between December and March inclusive. The increased numbers of winter I refer, as disorganizing pneumonia, to humoral circumstances influenced by the season.

M. Malgagne's statistics may be made to throw some light on these views, but, for the most part, only indirectly. We find that of an immense number of recorded cases in Paris, between the end of 1835 and that of 1837—

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* No. 1 of the New Series, April, 1843.

Hernia occurred 4 times as often in males as females.
„ often in the first year of life.*
„ rarely after this, and more and more so till the ninth year.
The numbers increase after the ninth year.
„ still more between 13 and 20 (in males only—exertion).
„ „ 20 and 28 (in both sexes—pregnancy.
Males increased by $\frac{1}{4}$,
Females „ $\frac{1}{2}$)
„ „ 28 and 29 (and most in females).
„ stationary from 30 to 35 = $27\frac{1}{2}$ per annum } 4 males to 1 female.
„ increase from 35 to 40 = 52 „ }
„ „ „ 40 to 50 = 96 „ 3 males to 1 female.

Here we have a mixture of all kinds of cases—simple hernia, with instances of transitory and severer strangulation—but we may perceive that the simple cases decline in annual numbers after the 30th year, and that the largest amount of cases occur to the surgeon on all accounts (of strangulation, &c.) between the 40th and 50th years of life. From calculations of cases at Guy's Hospital after the publication of my former paper, I find the mean ages of 26 cases fatal on various accounts to be $56\frac{1}{4}$ years, and that of 26 serious cases which recovered to be $44\frac{1}{2}$.

From my printed table I find that the mean ages of the 47 patients successfully operated on was $42\frac{8}{47}$, or 42 years 6 weeks; and that the mean age of those 33 who were fatally operated on, was $45\frac{16}{33}$, or 45 years 6 months. These last sets were chiefly recorded by authors as serious cases; yet I think the difference of age points to the same fact as an analysis of 70 other fatal cases now before me, in which defective reparation, unorganisable effusions, and deteriorated solid viscera, seem to be essential constitutional concomitants of old hernia becoming seriously strangulated.

"Dr. Norman Chevers has lately recorded in the Guy's Hospital Reports the circumstances of a large number of unsuccessful or fatal cases of accident and operation. With disordered viscera, imperfect secretion and depurative elimination are palpable inductions in these cases†, and too forcible and important as arguments of humoral deterioration to be omitted, or even ranked low as the causes of mischief, whether affecting cases of accidental injury, operation, or parturition, or such even as those of catarrh, pneumonia, or hæmorrhage epischeses.

In my former paper I thus expressed myself on this subject:—The proneness to erysipelas or visceral inflammations, under most operations, marks them (herniæ), as well as many more who are the

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* Chiefly umbilical and inguinal, doubtless; and from conformation.

† These principles have been long taught at Guy's, and the facts on which they are based run through a series of 30 or 40 large volumes of museum manuscripts, which are not merely careful records of common facts. Thirteen of these volumes are, perhaps, the most valuable (no slight praise) of all the labours of Hodgkin: and I may claim an equal quantity as my own work. A tabular analysis of the whole for more than twenty years, kept up since I was a pupil, renders the examination of the whole available almost at a glance. Dr. C.'s exposition is principally based on my own autopsy-histories.

subjects of operations at the like ages in great cities. Yet all these constitutional dispositions, as they are called, are found, on inspecting the dead, to be connected with very tangible and permanent alterations of the great viscera. These actual disorganizations are not incompatible with seeming health, but are highly obnoxious when reparation is in progress. If one organ is found affected after death, the change is proportionately more considerable: if several are involved, they are mostly less affected. It is to be remembered, however—though, as after all fatal operations, the changes are less severe and advanced than when the visceral affection alone seems fatal—yet they are so manifest that the wonder is that they were not alone destructive, and *that* much sooner: at least this has been my own reflection on many occasions."

Before the fatal period, herniæ descend almost with impunity, but at length, as in the great injuries, or rather as in cases of slight injury which have become dangerous, the reparative resources being unequal to the task, all the events till death sufficiently indicate the specific state.

It may be in a manner a test of a surgeon's principles for him to ask himself this question. Is there any fear of diffused inflammation from a circumscribed injury to the peritoneum in a healthy person? My answer is, there is no fear whatever; but I do not say, if the patient have been unduly exposed before, or during the treatment, or if subjected to violent medicines, that he is a healthy person, and doubtless there are other similar considerations. What some persons intend when they declare that certain tissues are prone of themselves to spreading inflammation, is still a problem. At one time the assertion is true of all tissues; at another it is not true of any. Of course disease is more serious in certain tissues, and also less happily repaired.

The opinion for which I contend involves of course specific rules of treatment, as I have formerly indicated. In the anticipation of fatal peritonitis, mild, speedy, and efficient remedies are the objects to be held in view. Every kind of aggravation from delay, violence, exposure to cold, or severe remedies, is to be regarded as highly dangerous. I have formerly said as much on this part of my subject as may be desirable, until the main principle is admitted to be a sound and essential one. I shall conclude, therefore, with some remarks on a recent theory of strangulation.

Dr. O'Beirne,* of the Richmond Hospital, Dublin, some time since recommended the use of the rectum tube to facilitate the reduction of the "intestinal hernia," by giving exit to the retained gases; a simple practice, which if we were to judge from the experience recorded, cannot fail to be occasionally very useful. This

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* Article 8th.—In the Dublin Journal of Medical and Chemical Science, for September, 1838. "On the primary Causes of Strangulation, and on an improved mode of performing the Taxis in Cases of Intestinal Hernia. By James O'Beirne, M. D., one of the Surgeons to the Richmond Surgical Hospital, &c., Dublin."

distinguished surgeon's views, however, seem to me almost to demand some comments; which I have set down just in the current in which they occurred to me. If any should concur with me in recommending a trial of the practice named, they will probably see no great objection to the following brief inquiry relative to its application, the cases concerned being of so frequent occurrence and great importance, and the causes of strangulation being still subjects of useful and interesting research.

In Dr. O'Beirne's account of the causes and treatment of strangulation in hernia, he attributes the strangulation to the easy access of flatus into the incarcerated portion of bowel, and he recommends the use of the rectum tube for the relief of this air-distended portion.

It will, I think, be in conformity with the opinion of most surgical pathologists, to regard the neck of the sac in hernia as quite passive in the production of strangulation, so that we are all prepared to look for some other cause of this serious state. What commonly produces strangulation? Dr. O'Beirne says flatus does it; but of course this will not apply to the simple omental hernia; nor will it, I suppose, explain the process when only a segment of the intestinal cylinder is involved.

It is an ingenious experiment to make a perforated card represent the aperture of hernia, and then, having passed a knuckle of intestine through it, to show the effect of rather forcibly inflating this portion of bowel; but in connexion with this, the Doctor asserts that it is not commonly the case, in strangulated hernia, that the intestinal tube is rendered impervious by the compression about the neck of the sac, and he has concluded, "that no proposition in nature can be clearer than this: namely, *that as strangulation is produced by a distending force acting from within outwards, and separating the parietes of the constricted gut, and maintaining them at a greater or less distance from each other, there must be a communication.*" Now, I suppose it admitted on all sides, 1st, that pressure from within the abdomen first protrudes about as much bowel as the ring will easily contain; 2ndly, that whatever may constitute the protrusion, it will generally happen that with the increase of the protrusion there will be a certain increase of calibre or mass in that part actually included in the plane of the constricting ring; and 3rdly, that with the very commencement of strangulation there begins also injection and swelling, or even additional fleshiness, of all the intestinal tunics included in the sac. I do not think that these facts warrant the assumption of a persistent "channel of communication" between the bowel in the sac and that in the abdomen, which communication Dr. O'Beirne admits must be extremely narrow. I would suggest that the *distending force* acting from within outwards may at times find a substitute in the increasing turgescence of the strangling gut,* and it cannot but be remarked

* The second part of Dr. O'Beirne's proposition above, declares the strangulated tube to be, of necessity, distended, and he seems to infer with air. In answer to this I would say, that the gurgling sound of air, on reduction, is often absent, and that in operations it is commonly evident that the inflation is not more

that a communication between the general bowels and the strangulated portion which may transmit air, and which according to the Doctor's experience does admit of the passage of air from the strangulated bowel, with the use of the rectum tube, certainly ought to allow of the free escape of air and fluids by the application of ordinary taxes, and still more certainly when exposed by operation. In thus adverting to what I deem erroneous, I would allow that the use of the rectum tube in hernia, in the manner advised and illustrated by examples, may be still a valuable adjunct to surgery.

A few remarks on the deductions to be made from the cases related in corroboration of the Doctor's views, will serve to introduce a somewhat different explanation of the result. I do not know if it is to be regretted that hitherto we have no account of the different cases in which the rectum tube is not calculated to be successful. I suppose, however, there are some; as, particularly, very small hernia, and acute cases in the young. Again, it may be quite just to conclude that the taxis, successful with the use of the tube, might, in a few cases, have been ultimately effectual alone. Many of the cases recorded to the advantage of the tube, were for hernia in very aged patients; a circumstance involving general tympanitis almost necessarily considering the nature of the case. Indeed, the tympanitis would appear in some measure essential to the establishment of Dr. O'Beirne's main position. With regard to the use of the tube in young hernia patients, I am tempted to infer that the result must often disappoint us, and I have to add, by way of caution, that I have known the tube (resembling that of the common stomach pump), penetrate the rectum and peritoneum, and in very careful hands too.

A trial of the rectum tube in strangulated hernia has the advantages of requiring no delay, not interfering with other remedies, and above all it is comparatively safe; for with proper knowledge and care the thick bulbous tube of Dr. O'Beirne cannot, I think, go wrong.

It is scarcely necessary to contend for a different explanation of the use of this instrument; the cases narrated seem to prove that it has been serviceable, as far, surely, as such a number well can. My own explanation would be briefly this: that the sudden diminution of abdominal distention by evacuation per anum (as by mouth), must facilitate the taxis, and if we suppose the evacuation of flatus to be great, and the reduction attempted simultaneously, the beneficial tendency is almost certain. Of course there will often be a difficulty in determining the precise share of influence attributable to remedies when combined, and there must be some difficulty in ascertaining well the effect of the tube with regard to the quantity of gas to which it gives exit; for I deem it important to observe that after death by strangulation of the small intestine, the whole colon is for the most part remarkably empty; as I have very often demonstrated on inspection during the last few years.—*Lond. Med. Gazette*, May 5, 1843.

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remarkable than the fluid secretions in the bowel; and lastly, that the extreme thickening of its membranes is by far the most notable inherent source of difficulty in the return.

Case of Rupture of the Internal Jugular Vein into an Abscess, by Alexander King, Esq., Member of the Faculty of Physicians and Surgeons, Glasgow.—On Saturday, the 12th November, 1842, I was invited by Mr. John Brown, surgeon, whom I met accidentally on the street, to accompany him to visit a patient, of whom he afterwards gave me the following account :

Sixteen days before, a boy, aged four years, who had previously enjoyed excellent health, and was stout and well-formed for his age, was seized with symptoms of pyrexia, followed by the eruption of scarlatina, which disappeared in a few hours, without any obvious cause. Very considerable constitutional disturbance followed, and on the second day a diffused swelling appeared on the right side of the neck, below the lobe of the ear, considerably impeding deglutition and respiration, and giving rise to an incessant tickling cough.

The swelling for some days remained stationary, but eventually evinced a tendency to suppurate, and after the application of poultices it pointed and burst, three days before our visit, leaving an opening into which a No. 8 catheter could be introduced. A quantity of pus was discharged; the swelling gradually subsided, and everything seemed to proceed to a favourable termination, till about five minutes before our arrival, when the girl who was holding him observed blood running down his breast from underneath the dressings, and on removing them, to ascertain whence it proceeded, two jets were propelled forcibly upon her face and cap.

On removing the cloths which had been applied to arrest the hæmorrhage, we found blood still flowing in a free stream from the opening already described ; the walls of the abscess were very tense, about the size of a hen's egg, which, according to the mother's account, was larger than before the abscess first gave way. It occasioned considerable difficulty in breathing, and gave rise to occasional severe paroxysms of coughing, during which it became excessively firm and prominent.

Pressure on the carotid did not, in any manner, alter the state of the tumour, and pressure directly applied to its walls immediately brought on a fit of coughing, but did not appear to displace any of its contents. The pulse was extremely quick and feeble, and occasionally intermitting; the countenance was pale and blanched. Uncertain from what source the blood escaped, we resolved to apply a compress and bandage to support its walls, and allow coagulation to take place, but we found that when the bandages were applied tightly, the child's breathing was considerably impeded, and almost incessant coughing took place, so that we were compelled to apply them less accurately than we could have desired.

During the afternoon hæmorrhage again occurred, and Mr. Brown required to apply additional compresses. We both visited the patient again at mid-day on Sunday, and found the tumour had increased in every direction, and more compresses were needed to suit the altered circumstances of the case ; but it was now evident from the attenuated condition of the part of the walls which we saw, that such mechanical means would soon prove ineffectual in restraining its contents,

as coagulation had evidently taken place to a very limited extent; however, the debilitated condition of the child, and the uncertainty of the injured vessel, dissuaded us from operative interference. We therefore resolved to give a further trial to pressure, and left directions to send for Mr. Brown, whose residence was within a few yards, should hæmorrhage occur.

We again visited the patient about seven o'clock the same evening, and found that the tumour had still farther increased, and had impeded the respiration to such an extent, that the parents had found it necessary to loosen the bandages a little.

We agreed to remove the compresses and bandages, so as to ascertain exactly the state of the tumour, and if it gave way (for which occurrence we were fully prepared), to restrain the hæmorrhage by making pressure on the injured vessels with the finger, and afterwards secure it with a ligature.

When the bandages were partly removed, the child was seized with a violent paroxysm of coughing, during which the anterior wall gave way, to the extent of two square inches. A thin coagulum, about the size and thickness of a crown piece, was ejected, followed by an immense gush of blood.

I instantly introduced the first two fingers of my right hand into the opening, and surrounded the fingers and the tumour with cloths, and very little blood was afterwards lost, although my fingers could not get either to the upper or lower orifices, in consequence of the lower part of the tumour being covered by the parotid gland, and sterno-cleido-mastoid muscle.

When my fingers were first pressed into the abscess, I felt blood flow freely downwards from above, and propelled upwards with great force, during each forcible expiration. A state of syncope followed in a few seconds, and he expired shortly afterwards.

Dissection, ten Hours after Death.—The swelling had entirely disappeared, and the skin, which had previously covered the tumour, had contracted in every direction, so that it could hardly be conceived that so much distention had ever existed.

On dividing the integuments, from the lobe of the ear, to the middle of the neck, we found that the tumour, to a certain extent, had been divided into two sacs, which communicated very freely. The one extended below the digastric muscle and parotid gland to the base of the skull, the other having the parotid gland for its posterior wall, the sterno-mastoid muscle for its external, the platysma fasciæ and skin for its anterior. On cutting through the substance of the parotid, which was sound and healthy, and the posterior belly of the digastric muscle, a very distinct view of the source of the hæmorrhage was obtained. Nine-tenths of an inch of the external wall of the *internal jugular vein*, commencing two lines below the base of the skull, and extending downwards, was completely removed, as if by a sharp scalpel. The internal wall, and even the margins of the opening, were perfectly healthy, and of the normal pearly white colour. The common carotid, at its division, was exposed by removing a little healthy cellular structure, and showed no appearance

of disease. The walls of the abscess were examined in every direction, and found to be healthy, and an incision, two lines in depth at any point, displayed the surrounding structures in a natural state.

We were not permitted to examine the viscera.

This case was surrounded with many difficulties. The most probable source of hæmorrhage was a rupture of some of the branches of the external carotid, but pressure upon that vessel having no effect upon the tumour, we did not consider ourselves justified in applying a ligature below the site of the disease. Indeed, the child was so exceedingly exhausted from other causes, that there were no reasonable grounds for indulging a hope of saving its life, even although the hæmorrhage could be checked, without the infliction of any additional shock on the system, and it is fortunate, as the result shows, that no such operation was performed. We might have laid open the tumour, searched for, and secured the bleeding vessel, and but for the debilitated condition of the patient, this procedure would have been followed; but as it was evident, from the state of the pulse, that the loss of a very trifling additional quantity of blood would prove fatal, we considered it most judicious to endeavour to effect coagulation. The regurgitation of the blood from the right side of the heart, during the act of coughing, rendered our attempts abortive.

I do not consider that the child's life could have been saved, even if we had possessed the fore-knowledge of the state of parts, which were displayed on dissection.

A ligature could not have been applied between the laceration and the base of the skull, even granting that the internal jugular vein could be tied with impunity.

On our first visit, the tumour had exactly the appearance of a neglected abscess. The distention and colour of the integuments would have induced us at once to give relief by an incision, had not the small opening, referred to, existed, and had such a mistake been committed, I do not think the hæmorrhage could have been even temporarily arrested, in consequence of the attenuated condition of the walls. The case presents a striking proof of the danger likely to occur, from rashly opening abscesses in the vicinity of important vessels; and, in the locality of this tumour, it is feared that strumous abscesses are every day laid open, after a very cursory examination.

The lithograph represents very accurately the state of the parts. It was drawn from a cast taken at the dissection.

A case, in some respects analogous, is narrated in the appendix to Mr. Liston's recent memoir, *On a Variety of False Aneurism*, by Professor Fergusson, of King's College, London. In that, as in the present case, no operative interference was resorted to, in consequence of the debility of the patient, and the child died suddenly of hæmorrhage, which was found, on dissection, to have taken place from an ulcerated opening in the lingual artery, near its origin from the carotid.—*London and Edinburgh Monthly Journal of Medical Science*, March, 1843.

Observations on the Medicinal Properties of Indian Hemp, by John Clendinning, M. D., F. R. S.—The author commenced his paper with general observations on the importance of narcotics, but especially of opium, in the treatment of disease. After having referred to the numerous examples of the successful use of opium in acute and chronic disease, he adverted to the inconvenience occasionally attending the employment of opiates, especially to the derangement of the stomach and bowels and kidneys, and the vertiginous and other painful conditions of the nervous system they so frequently produce. He then stated that, in his experience, those inconvenient effects had occurred so frequently, and been found in many cases so difficult to obviate, without the abandonment of the use of a class of remedies of the utmost importance in a large number and variety of diseases, that he had been recently induced to make trial of the extract of hemp, recommended by Dr. O'Shaughnessy, of Calcutta, as a substitute for opium in numerous instances. The author's object in making this communication was to bring under the notice of the society, the results he had obtained, as in his judgment important to be made generally known, with a view to further and more extended trials by other practitioners, more especially at this moment, when there was some prospect of a new edition of the London Pharmacopœia, upon which he understood a committee of the Royal College was actually engaged.

The author then gave details of eighteen cases, from a much larger number, in which he had given trial to the new remedy with satisfactory results.

These trials included cases of acute and chronic disease, in persons of both sexes, and persons of very various ages. The number of cases detailed, although necessary to substantiate the claims advanced by the author in favour of the new narcotic, was yet such as to preclude any analysis of them in this place.

It will be sufficient to say, generally, that the indications for its use in these cases appear to have been more especially to relieve neuralgic pain; to relieve irritation and spasms of chronic bronchitis, of rheumatism, &c.; and to subdue sleeplessness or disturbed rest from whatever cause, if not arising from inflammation in the head. The author found the remedy highly useful in checking cough in phthisis, and cramp and irritation in the limbs, &c., in rheumatism, without any interference with the digestive processes, or intestinal action or secretions, yet with an anodyne and hypnotic effect not less uniform than that of opium. He gave it trial also in several cases of low fever, characterized by spots, tremors, and delirious restlessness, and with very good effect; it repressed delirium and conciliated repose, and thus secured that tranquillity and refreshment the proper effects of sleep. He reported, also, some instances of successful use of hemp extract, as a pure anodyne, to secure sleep, by suppressing pain, arising in one case from a cut, in another from a violent purgative, and in a third from rheumatic irritation of the meninges.

The author concluded his paper by a *resumé* of the objects of his trials, and the results and conclusions he had attained.

He stated that his experience had satisfied him that the hemp extract was possessed of medicinal properties sufficiently energetic and uniform to entitle it to admission into our national pharmacopœia amongst our most useful narcotics; and that as a substitute for opium, especially in cases for which that drug was unsuited, owing to idiosyncracy, or to the presence of active indigestion, or the nervous temperament, he had found reason to place much confidence in the extract, and to regard it as a remedy exceeding in value that of any other narcotic, or combination of narcotics, with which he was acquainted.—*Prov. Med. Journal.*

On the Sugar in the Blood in Diabetes, by Dr. Bence Jones.—The very delicate test for grape sugar which was communicated to the Academy of Science in Berlin, in 1841, by Professor Mitscherlich, as the discovery of Herr Trommer, was applied by him without success to the examination of diabetic blood. He found, however, that if $\frac{1}{100\,0}$ of grape sugar was mixed with blood, the test would indicate its presence. An opportunity occurred to the author of this paper, of repeating the experiment on the blood of a diabetic patient of Dr. Nairne's, in St. George's Hospital. The disease was of about a year's standing, and the patient was in other respects in tolerable health. On the 24th of January, 1843, he was bled to twelve ounces three hours after a dinner of bread and meat. The following morning the blood was well separated; the serum milky; the clot slightly buffed and cupped, specific gravity 1029,7. The serum became clear when treated with æther, and the test for grape sugar gave a negative result, as the precipitate which first formed did not redissolve, and only became much darker when heated, partly in consequence of the deep purple colour which is formed by the action of caustic potash and sulphate of copper on fibrin or albumen.

The albumen was, therefore, removed by evaporating the serum to dryness in a water bath. The residue was finely powdered, treated with water, filtered, and tested for grape sugar. The characteristic change then took place. The clot of the same blood was treated in the same way, and the test showed that grape sugar was present in it also. The urine passed between three hours before the bleeding, and nine hours after was five pints, specific gravity, 1031,3, and when tested by the same method, the liquid first became blue, and then a very large precipitate formed, which was at first bright yellow, and after some hours became dark green.

Uric acid alone does not form the clear blue solution, although, when boiled with the potash and sulphate of copper, it will produce the same coloured precipitate as the grape sugar does.—*Ibid.*

On Oily Cantharidine as a Substitute for the ordinary Blistering Plaster.—M. Buchner, senior, obtains this preparation by treating

the coarsely-pounded cantharides in a displacement apparatus with weak æther of 0·776 spec. grav. until the æther passes free from colour. The greater portion of this latter is removed from the solution, and the residue exposed to a gentle heat until every trace of æther, alcohol, and water has disappeared. In this manner 11 per cent. of the cantharides employed is obtained, of a product which is liquid at a temperature of 76° to 86°, but becomes solid at 68°. It has a buttery, unctuous consistence, a greenish yellow colour, and a very disagreeable odour, which affects the head. 10 to 15 centigrammes suffice to produce a great blister; it must be applied on taffety or on paper.

The following notice on the above communication is by M. Soubeirm:—The oily cantharidine of M. Buchner differs but slightly from the preparation employed in France, and which is obtained by treating the cantharides with officinal æther. It is an oily substance, which was recommended long since by M. Trousseau as vesicatory; and in fact it is very useful when recent, but if preserved the cantharidine separates gradually in the state of crystals, and the blistering property disappears. The following preparation, of which I have taken the formula from some German journal, but do not recollect the author's name, is employed to far greater advantage:—

Extract Acetic of Cantharides.

Cantharides in coarse powder, . . .	4 parts.
Concentrated acetic acid from wood, .	1 „
Alcohol of 0·849, ...	16 „

Digest in the water-bath in a temperature of 40° to 50°, collate with pressure, filter, distil, and evaporate at a gentle heat. The product has a buttery consistence. M. Trousseau, who experimented with it, has been extremely well satisfied. It is only necessary to grease a little paper with this extract, and to apply it to the skin, to have in a very short sime a blister formed. The consistence of this preparation, and especially the presence of acetic acid, prevent the crystallization of the cantharidine.—*Chemical Gazette.*

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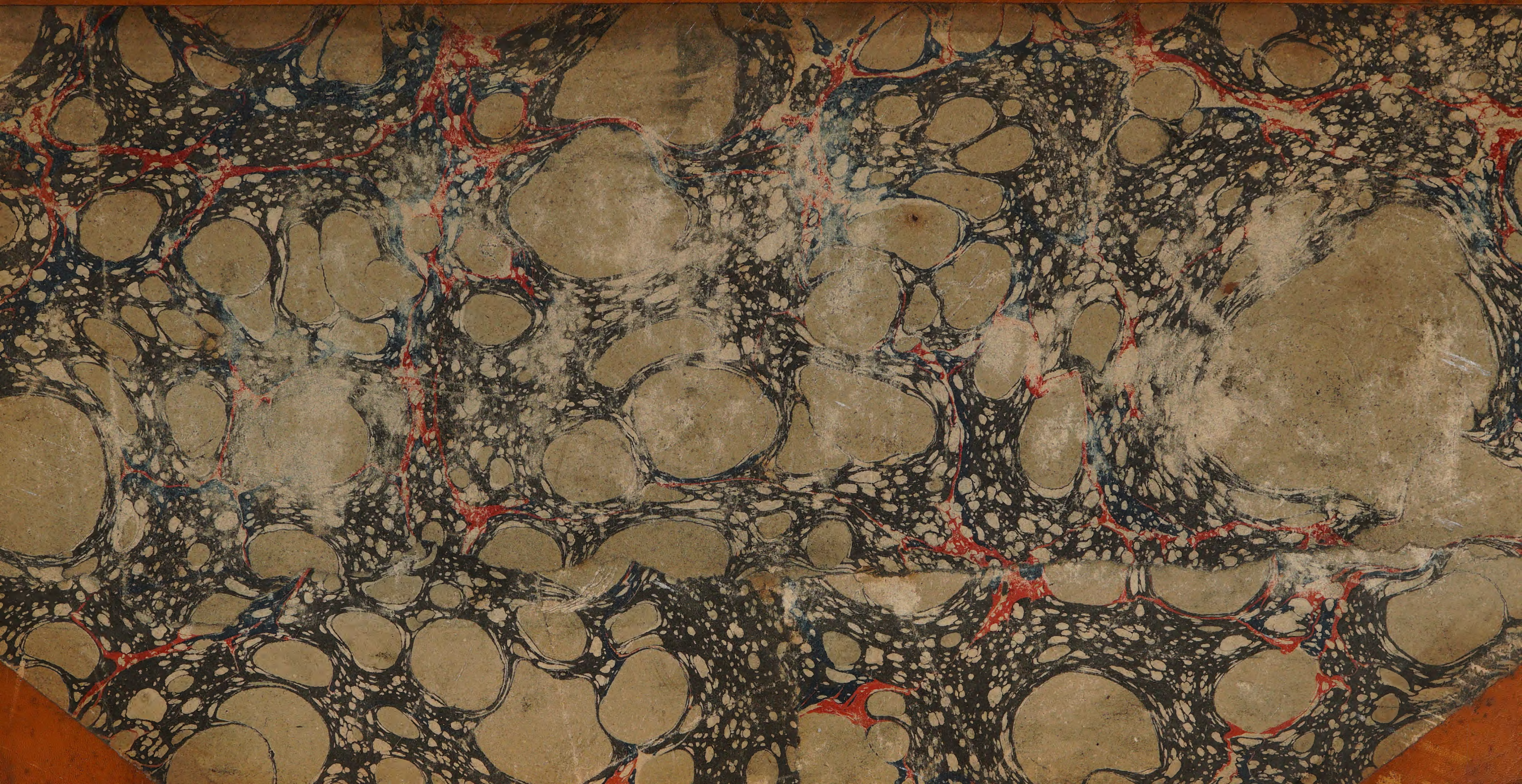
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